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ABSTRACT

An exploratory study was conducted at the University of Southern Queensland (Australia) to document the knowledge of students held by a small number of highly effective primary school teachers and to identify the ways these teachers acquired their knowledge and used it during classroom instruction. This paper presents the findings of the investigation with one highly effective teacher who participated in the project. This teacher's knowledge of the class, student groups, and individual students was analyzed in terms of personality, interests, abilities, work habits, attributes, and behaviors. The teacher gathered knowledge about a student from parents, other students, classroom observation, working with the students, talking with her cooperative teaching partner, and reviewing formal school records. The teacher used this knowledge of students to develop students' social skills, to improve their work habits, to assist them with academic problems, and to direct their personality development. It is concluded that the teacher's teaching effectiveness might stem from the knowledge of her students, specifically the scope and depth of that knowledge, the classroom relevance, validity, integration and consistency, importance attached to knowledge of individual students, and ability to clearly articulate personal teaching philosophy. (Contains 19 references.) (JDD)

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TEACHERS' PRACTICAL KNOWLEDGE: OBTAINING AND USING KNOWLEDGE OF STUDENTS

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This paper documents a case study which is part of a larger research project. The author acknowledges the input of other members of the research team in the development of the findings presented here - Leigh-Anne Cornford, Queensland Department of Education; Associate Professor Perc Marland, USQ; Peter Olsen, USQ; and Sue Phillips, Queensland Department of Education.

> "Teachers have not been seen as possessing a unique body of professional knowledge and experience. The prevailing view amongst most researchers is that teachers have experience while academics have knowledge." (Feiman-Nemser & Floden, 1986, p. 512)

During the last decade, teachers' practical classroom know-how or their practical knowledge (Sanders and McCutcheon, 1986) has been subjected to examination in attempting to define a professional knowledge base for the teaching profession. This approach recognises that teachers' knowledge is 'actively related to the world of practice' (Elbaz, 1983). Also referred to as craft knowledge (Brown and McIntyre, 1988) and implicit theory (Clark and Peterson, 1986), this practical knowledge has been found to be time bound and situation specific, personally compelling and oriented toward action (Feiman-Nemser & Floden, 1986, p. 512). It develops from experience, resides in the minds of teachers and is highly valued by them. The basic research strategies involve getting teachers to talk about their work in interviews (Elbaz, 1983) or in teacher seminars (Lampert, 1984, 1985) or to participate in discussions of observations and classroom videotapes. Researchers take the verbal data and make inferences and claims about the content, uses and organisation of the teachers' knowledge.

> "By showing how teachers use their personal and practical knowledge to resolve tensions, manage dilemmas and simplify the complexities of their work, researchers underscore the critical role of teachers' knowledge in teaching." (Feiman-Nemser & Floden, 1986, p.514)

Documentation of the entire scope of teachers' practical knowledge has been limited. Elbaz's (1983) study of a secondary teacher proposed five categories of practical knowledge: knowledge of curriculum; knowledge of milieu; knowledge of instruction; knowledge of subject matter; and knowledge of self. Shulman (1987) suggested that at a minimum, the categories of teachers' knowledge base include: content knowledge; general pedagogical knowledge; curriculum knowledge; pedagogical content knowledge; knowledge of learners and their characteristics; knowledge of educational contexts; and knowledge of educational ends, purposes, and values, and their philosophical and historical grounds.

While some areas of teacher practical knowledge have attracted much research interest, others like teachers' knowledge of students have received scant attention (Kagan & Tippins, 1991). This is despite the fact that much informal discussion amongst teachers highlights the importance they attach to knowing their students. In many cases this 'knowing' is in a much wider sense than that recorded on school records or report cards. The literature documents some kinds of student information that teachers acquire and how they use it, but little on the sources and the methods they use for gathering it.

Marland and Osborne (1990) and Kagan and Tippins (1991) show that teachers do collect data on their students. In their study of a secondary English teacher, Marland and Osborne (1990) report that her knowledge of students usually ranged over nine categories: academic achievement; concern of students; extra-curricula activities; membership of peer groups; personality characteristics; family background; attitudes; and in-class behaviours. Kagan and Tippins (1991) studied the knowledge teachers acquire about their students and how it may change as teachers gain classroom experience. The student profiles developed by twelve elementary student teachers and seven secondary student teachers in the study referred to physical appearance/ motor skills, academic performance (ability, achievement), classroom behaviours (positive as well as negative), social interaction with peers, academic motivation, personality, favourite activities (including intramural sports) and family life. Jackson, Silberman and Wolfson (1969) indicate that teachers have more and different types of knowledge about some students than others and that knowledge influences their treatment of the students.

The literature provides some information on how teachers use their knowledge of students. Brophy and Good (1974) show that teachers use their knowledge of students' prior academic success, family background and personality traits to form expectations of them which are then used to set realistic educational goals, plan appropriate learning activities and cater for individual student needs in the classroom. Teachers also use their knowledge of students to interpret their individual behaviours and then plan reactions that are customised or tailor-made to suit particular individuals (Marland, 1986; Marland and Osborne, 1990). Anning (1988) in her research with six primary teachers, suggests that the teachers' awareness of a student's personal situation and likely emotional responses had a significant effect on the types of strategies they used in relation to the individuals. Knowledge of students also helps teachers make sense of and assess events in the classroom (Doyle, 1977; Carter, Cushing, Sabers, Stein and Berliner, 1988).

> "... experts (*teachers*)... have a rich store of classroom knowledge about both students and events, and they use that knowledge to understand and explain classroom phenomena." (Carter, Cushing, Sabers, Stein and Berliner, 1988)

Teachers seem to use their knowledge of students at a particular year level to form over time, a picture or image of a class at that year level (Carter, Sabers, Cushing, Pinnegar and Berliner, 1987). Calderhead (1983) reported that experienced teachers had amassed a large amount of information about students and that they seemed to 'know' a class before they met them. According to Berliner (1986),

> "It is a knowledge that influences the running of the classroom: the pace, the level of intellectuality, affect, work orientation, and so forth. It is knowledge that influences classroom organisation and management and is the basis for transforming subject matter " (p. 10).

Marland and Osborne (1990) report that information about students was obtained from different sources - peers, other teachers, assignments, in-class observations informal contacts, parents.

Aims of the Study

A research team at the University of Southern Queensland planned a small-scale, exploratory study to document the knowledge of students held by a small number of highly effective teachers and to identify the ways these teachers acquired their knowledge and used it during classroom instruction. This paper presents the findings of the investigation with one highly effective teacher who participated in the project.

Methodology

Procedures for the Identification of Highly Effective Teachers

The identification of a group of highly effective teachers was the first crucial step in the study. Literature on effective teaching provided initial criteria by which these teachers would be identified. Practising teachers and teacher educators were asked to comment critically on the criteria at various stages in their development. Ultimately a form was produced which included criteria that focussed on the teachers' abilities to promote high levels of academic achievement, to use effectively a range of teaching strategies and to engender a convivial and challenging classroom atmosphere through establishing warm and productive teacher-student relationships and appropriate management procedures. Items relating to the teachers' status as a classroom teacher among parents and professional consultants familiar with the teachers' classroom performance were also included.

Four large schools in a major provincial city were identified as possible research sites because they were regarded as ones in which members of the administrative teams had detailed, personal knowledge of teachers' effectiveness. Principals in each of these schools were approached and their approval sought to conduct the research in their schools. In three schools where approval was given, staff were informed of the study in a meeting with two of the researchers. Members of the administrative team in each school were asked to independently nominate those teachers they considered highly effective and rate each of their nominees on the criteria. It was thought this procedure would clearly indicate those teachers about whom there was some consensus among administrative team members as to their effectiveness as teachers. The eleven nominees were ranked by the research team on the basis of these reports and based on the year level they were teaching, were categorised as lower primary, middle primary or upper primary. Two teachers with the highest rankings in each of the three groups were invited to participate in the project. One declined because of an anticipated lengthy absence from the classroom during the term when the data was to be collected.

Data Gathering Techniques

The five participating teachers met with the research team to discuss the aims, methodology and ethics of the research project. The teachers agreed to a series of three or four half-hour interviews at which they would be asked to talk about their knowledge and perceptions of the class as a whole and of students in groups as defined by the teacher. They would also be asked about the knowledge they held on several individual learners chosen by the teacher. Throughout the interviews, the teachers would be asked to indicate how they acquired this knowledge of their students and then how they used the information in classroom instruction.

The type of interview considered appropriate for the study was in-depth and unstructured. The interviewee was seen as the expert. The interviewer would assist the expert recall the sought-after, tacit knowledge by active listening, reflecting, seeking clarification and extension through non-leading probes and recursive questioning and avoiding being judgmental. Grand-tour and mini-tour questions, as recommended by Spradley (1979) for ethnographic interviewing, were used. Detailed interviewer role prescriptions were established and interview procedures demonstrated and practised.

Since interviews were conducted in the last term of the school year, the teachers' contact time with their classes had extended over at least eight months of schooling. All interviews were audiotaped for later transcription.

Data Analysis

Each interview transcript was analysed by the member of the research team who carried out the interview. Emerging trends from each transcript were discussed and compared in a series of research team meetings. Protocol analysis procedures were refined during these meetings.

Preliminary analysis of each teacher's knowledge was presented to the teacher for her reaction and a meeting of all participants was held with the research team when the wider sample had been analysed and conclusions drawn. While there were specific emphases for each teacher, it was possible to draw more generalised conclusions. This paper documents a case study of one of the highly effective teachers who agreed to participate in the study - Louisa (a pseudonym), a year 6/7 primary school teacher.

Louisa is an experienced teacher who teaches 46 year 6/7 students at an urban school in a multi-age, cooperative teaching setting. She sees her role as providing a familiar and safe environment where students can develop more and more independence, self control and self confidence in preparation for the transition to secondary school. "I see my role as a guiding role; ... I am there to help. I am there to guide them because I don't think any children ... pick up independence ... (It) is a learned thing ... I'm there in the guidance role, to get them to work ... you can't possibly give them all the knowledge they need. If you give them a desire ... to keep learning happening, ... a desire to find out things for themselves and to implement what they find out and to use that, and to encourage them along the way and make sure that they are interested in what they're doing ... Yes that's basically what I see as being our role, is getting them to do that ...".

The classroom works on "flexible timetabling". Both Louisa and her teaching partner see this as the most appropriate structure for building the student independence towards which they strive. The students are provided with a timetable which is mostly blank except for some 'givens' such as fixed whole class lessons or maybe some small groups lessons. Specialist lessons (eg library, physical education, music) would be 'given' or fixed. The students plan their work and when they will do it during the week and then complete the details on their timetable.

Within this structure the role of the teacher is to provide the 'givens' and to question and guide the students to enable them to make appropriate decisions. The completed work is due at the end of each week when the teachers check it. The teachers provide more structure and less student autonomy in this decision making early in the year. "We do that with a lot of input, a lot of help, particularly in the beginning of the year. Some students take to it really easily, some need a lot of work, so we get those ones out and work with them and talk to them about things like...".

Louisa sees this structure as appropriate in cooperative teaching situations as well as single teaching classrooms but thinks it is probably easier when teaching cooperatively because there are two bodies to monitor all the students. "To me working that way is probably one of the best ways of catering to individual needs with a large group of children; in that if you've got ten children who are not working well on whatever it is that they're meant to be working on, but the rest are, they can go along quite happily with what they're doing and these (10) tend to form a group, a needs group. One teacher works with this group. The other just basically helps out and supervises".

Louisa places strong emphasis on students' personalities and sees a strong correlation between each student's personality and the way s/he works in the classroom - their work habits, skills and attitudes. Because of her belief about the impact of student personality on the workings of the classroom, she highlights the need to develop personal insights into students; the need to get to know them as individuals ..."get an insight into them ... talk about what's happening at home... in the playground, what movies they've seen". She feels this helps planning.

Knowledge of class and groups:
Transcripts of interview segments relating to Louisa's knowledge of the class were analysed to identify discrete items of information which produced a number of categories - personalities, interests, abilities, work habits, attributes, behaviours. A similar approach was used in the analysis of those interview segments in which Louisa

identified various groups of students and outlined her knowledge of those groups. Categories of student group knowledge were similar, in many respects, to those for class knowledge. The appropriateness of these categories has been discussed with Louisa who sees them as valid. The categories identified are consistent with Louisa's perceived importance of knowing students' personalities. This category is discussed most frequently.

An integrated summary of the two sets of knowledge is provided in Table 1.

TABLE 1
Louisa's knowledge of the class and student groups

	Class	Group
Personalities	Healthy social interactions, good open relationships An accepting group A fair bit of maturity as far as being aware of their own personality goes	Quiet, shy, introspective ("tends to be lots of girls") Developing an identity/ own personality The "lost people", isolates, have social interaction difficulties Very confident, aware of own identities, realistic self expectation Are social creatures Lacking in confidence Quiet, will give nothing unless asked Loners
Interests	A range of interests - tend not to be restricted by their interests when planning - while many have a preferred field, they are capable of interest in other areas also	Lots of extra curricula activities (bright, confident group)
Abilities	Average range of academic abilities Capable of negotiating learning	Bright Have learning difficulties (NB linked to lack of confidence)
Work habits	Range of abilities re independent planning and work habits	Work well with limited teacher direction, self sufficient, self directed workers Need some guidance, somewhat self directed
Attributes	Learning styles linked to personalities Honest with themselves	Leadership qualities Not good sharers (ie. re working in a group) Assertive/ non-assertive (followers)
Behaviours	Peer pressure to conform to acceptable group behaviour Have a lot of self respect and a fair deal of self confidence Respect each others rights	Self discipline problems

Knowledge of Individual Students

When Louisa formed the groups of students and discussed those groups, she spent much time discussing individuals within the group after initially explaining her reason for grouping them. As a consequence, eight students were selected and discussed in some depth at various times in the interviews: three females (two year 7 and one year 6) and five males (four year 7 and one year 6). The knowledge offered was extensive and personalised, and readily recalled from memory. Consistent with the emphasis in all the interviews, much information disclosed here related to what Louisa referred to as their personality and their way of working which had also predominated in the reasons she gave for forming the groups. Table 2 shows the types of knowledge offered about the eight students. The number after each type of knowledge indicates the number of students this type of knowledge was offered about.

TABLE 2
Louisa's Knowledge of Individual Students

Categories	Sub-categories
Personalities	Confidence (2) Happiness (1) Maturity (3) Responsibility (1) Sense of humour (2) Quietness, shyness (4) Reliability (1) Attention seeking (1) Inquisitiveness (1) "Togetherness" (1) Nervousness (1) Ability to relate to others (4) Emotional demeanour (1) Leadership qualities (2)
Abilities	General level of success / ability (3) Mathematics ability (1) Language Arts/ Social Studies ability (2) Sporting ability (2)
Work Habits/ attitudes	Independent work skills, self sufficiency (4) Group work skills (4) Provides role model (1) Promptness (1) Effort (1) Self discipline (1) Productivity (2) Organisation (3) Seeking help (1) Response to challenge (1) Behaviour (1)

Family background	Level of responsibility given to child at home (1) Parental follow up of academic programs (1) Age, attributes etc of parents (1) Parental involvement at school (1) Place in family (1) Siblings (1) Child's rapport / interaction with family members (1) Family change (1)
Previous schooling	Time in current school (4) Time with students in the class (2) Student feeling re previous school/s (1)
Peer Relationships	Difficulties with peers (2) Protected, supported by peers (1) Respected, admired by peers (2) Acceptance by peers (1)
Playground Behaviour	Interaction patterns (1)

Strategies for obtaining knowledge of students

Louisa collects information about the class and the groups and individuals in it, from parents, other students, classroom observation, working with the students, talking with her cooperative teaching partner and formal school records. She reported that much of the knowledge develops gradually over a considerable period of time of observing the students, working and talking (both on academically related matters and more personal matters) with them and also through discussion with her teaching partner.

Louisa gives examples of ways she gathers knowledge of her students from their parents: "I was just talking to his mum about it and she said he's extremely like that at home and he's driving her berserk..." "I gather from her mum..." Much of this is from informal contact with parents. Another dimension that Louisa uses to develop a knowledge of her students is by observing parents with their children. "If ... forgets something, she rings mum and mum leaves work to go home and pick it up."

Information is also gleaned from other students: "... one of the girls said to me not long ago..." ; "A couple of the girls have remarked to me ...".

Classroom observation of the students at work has also helped Louisa gather useable knowledge about her students. Her continuing emphasis on personality and work skills is shown here "... observing work that she was doing and how she was doing it." Louisa stressed that other ways of obtaining knowledge often confirmed what she'd "seen happening".

Because Louisa's teaching partner had taught the Year 7 students the previous year when they were in year 6, she finds him a valuable source of knowledge about those students. Regular discussion with her teaching partner about students and particular daily activities provides useful knowledge for future planning. Discussion with other teaching colleagues is useful for Louisa. She reads written reports from previous teachers and listens to what they say about the student, but uses this as a guide only . She does not let this influence her expectations of that student as she feels "They're

often different with different teachers and a different group of children". She treats informal staff room talk in the same manner.

Louisa spends a lot of time talking with students both individually and in small groups about non-academic aspects of their lives. She feels a teacher needs to "...get an insight into them... talk about what's happening at home...in the playground, what movies they've seen...". She feels she needs to "know the children as children" and that it is particularly important to plan these times with the students she doesn't know very well.

Louisa spends a lot of time working with individuals and groups; checking work at the end of the week and when they hand in projects, working with them during activities, taking work samples etc. Early in the year, monitoring of individuals and groups takes place within a well structured program where each stage is carefully tracked.

The student - teacher negotiation of work plans that takes place in this classroom also enables access to knowledge about the students. In this process, the teachers find out what the students know about a particular topic, what they want to learn, and what they need to know both as a group and individually.

Louisa uses formalised testing results and guidance records in much the same way as written reports by previous teachers. She reads them to provide a background of the student but does not let this unduly influence her expectations of that student. She described an example where a particular student had a long record of problems in the school documented in teacher records and guidance reports. Louisa and her teaching partner used these as a basis for talking with the student about a "fresh start" that year.

Classroom Use of Knowledge about Students

As Louisa revealed her knowledge about the class, groups and individual students during the series of interviews, she indicated what use, if any, she made of that knowledge during classroom instruction. Table 3 presents an overview from the four interviews, of the types of knowledge and the reported uses of this knowledge.

TABLE 3
Louisa's Use of Knowledge of Students during Classroom Instruction

Type of Knowledge	Reported Use of the Knowledge
Social skills	
• loners, "the lost people", would work all day by themselves if allowed, "not good sharers"	Since Louisa considers social interaction important, she guides these students in group activities and ensures they are not with strong overpowering people. "We make sure that she is part of what's going on; that she doesn't leave herself out of what's going on."
• group work skills	Louisa indicated there are times when students self select groups/partners, but if the teachers choose to group the students, it is often according to their level of social development rather than in relation to their academic ability for the task.
Work habits	
• organised, confident, self sufficient, sociable	"We have seven at the moment who are working on individual research programs and those seven come from that group ... that's not how I organised it but that's just the sort of people they are". These students are allowed to work with limited teacher direction and since most will choose to work both individually or in groups equally if left to direct their own learning, Louisa is satisfied that their social skills are being adequately developed.
• organised	Louisa and her teaching partner rely on these students to help organise others and provide role models in groups. "By just having them there (in the group) they act as role models."
• self directed	"... those people who are capable of self direction are left to do a lot of work by themselves and it frees up the teachers for more direct work that we need to do with those people who aren't quite that self motivated."
• undirected workers	Try to develop self discipline and self control; give reminders; attempt to make more responsible
• calming influence, reliable	Put them in a group with other students who "might need some calming on that day".
• leadership abilities	Put them into a group that needs leadership.
Ability	
• academic problems	Use the support teacher to assist students with academic problems. This helps build up self confidence.

Personality • quiet, lacking in confidence	Lack of self confidence and learning difficulties are linked; "...its cyclical ... through lack of confidence they have learning difficulties and through learning difficulties they have lack of confidence and so on." Teachers spend a lot of time with these students. "... these people who lack confidence will also often lack the confidence to say 'Excuse me, this is boring and dull'. They will just go along and be bored". With these people the teacher needs to monitor closely.
• strong personality, self confident	These are very much self directed workers. They also have the confidence to tell the teacher if the work is dull and boring. The teacher is more likely to change the classroom instruction plan as a result of feedback given from these students.
• extremely capable but lacking self confidence	Put in a group of less able students; this splits up her peer group of very capable students. Also give her positive feedback.

The following transcript excerpt provides a graphic example of the way in which Louisa uses knowledge of her students in her classroom interactions with her students as they make instructional decisions. "I paired A from this isolate group with B from the lack of confidence group... I spoke to them ... when I paired them, about their personalities ... you know I just said ... "B, what sort of person are you? "and she said "Oh well, I'd probably let A walk all over me" and I said "A, would you?" "Oh yes, I'd happily walk all over her." They're very honest with themselves ... so before we started the project we talked about their personalities and how that was going to influence what they were doing and how that was going to influence what they were doing and that it was up to both of them to make allowances and balance it out and I monitored it with them..."

Summary:
The goal of this study was to document what highly effective primary teachers know about the students they teach and the ways in which they use such knowledge during classroom instruction. The rationale for the study stemmed from a conviction that knowledge of students is a vitally important component of the practical knowledge of highly effective teachers. A series of interviews was conducted with five teachers who had been identified by school personnel as highly effective. Criteria which had been collaboratively developed with classroom practitioners and teacher educators were used to identify the teachers who participated in the study. This paper documents the case study of one of the teachers.

Analysis of the interview data with this teacher indicates that knowledge of students is a key component of her practical knowledge. The study gives some indication of the nature of the schemata used by this highly effective teacher for gathering and interpreting information about students. It also highlights a wide variety of sources and techniques she used to acquire this knowledge and documents the ways in which she used her knowledge to fulfil her professional responsibilities in the classroom.

It does not seem unreasonable to suggest that Louisa's teaching effectiveness might stem from a number of factors which came out of the findings.

1. Scope and depth
Louisa's knowledge about students both as group members and individuals as disclosed during the interviews, was diverse ranging across a number of academic and non-academic areas. The knowledge in each area was comprehensive providing in-depth profiles of the students.

2. Classroom relevance
Louisa's knowledge of her students was highly relevant to classroom learning. Each category of student knowledge played a part in informing the teaching of groups, individuals and the whole class. There was strong congruence between the types of knowledge collected about students and Louisa's espoused approach to teaching.

3. Validity
Louisa accumulated the knowledge about her students through direct contact with the students and their parents. Other than her teaching partner who had similar contact with the students and their parents, the data show that she did not accept unquestioningly the opinions of other teachers (particularly those who had taught the students in previous years) in helping her really 'know' the students in a way that could inform instruction in her classroom during that particular year. She preferred to build her knowledge via direct interaction with the students themselves. She did however use a wide range of other techniques to cross check or validate her findings. She reports that ways of collecting information about her students often confirmed her initial perceptions based on what she had seen happening. The wide range of techniques used by Louisa to gather information about her students probably accounts for the way in which her knowledge is confidently espoused and used in her daily classroom instruction.

Louisa's lack of reference in any of the interviews to formal 'testing' as a means of gathering information about her students suggests that she found direct contact in a teacher - student or teacher - group situation as the more effective way of gathering useable information.

4. Integration and consistency
There is some evidence to suggest that Louisa's knowledge of her students was integrated with other forms of practical knowledge. Her information on the interests, abilities, work habits, personalities, etc. of particular students was closely tied to her knowledge about the best tactics to use when interacting with and teaching them. The information she disclosed about her students was consistent with the way in which she saw her teacher role; her personal philosophy.

5. Importance attached to knowledge of individual students
Louisa showed that she placed high importance on knowing her students. It informed the ways she interacted with them and planned classroom instruction. It seems in fact that the whole classroom structure and way of operating facilitated getting to know more about individual students. She plans time to talk with students (particularly those she feels she knows least) often about non-academic matters, and the flexible timetabling structure both facilitates and demands in-depth knowledge about individuals.

6. Ability to clearly articulate personal teaching philosophy
Louisa was able to articulate, unprompted, her view of her role as a teacher. It seems that she assembles information about students for a purpose that relates to her teaching philosophy and is then used within that framework. She also mentioned in the interviews that she had found the process of having to disclose her knowledge in the interviews a useful exercise in that she developed some further insights into working combinations as a result of having to talk about and group the students.

This highly effective teacher's knowledge of students was both diverse and in-depth, and highly relevant to classroom instruction. The fact that the classroom structure and modes of operation seem to both facilitate and demand significant knowledge of each individual student, suggests that this teacher considered knowledge of her students crucial. The knowledge was validated through the range of methods used to obtain it. Her knowledge of students was linked to other aspects of her practical knowledge and consistent with her clearly articulated personal philosophy. This case study of one highly effective teacher supports the contention that knowledge of students is a significant area of practical knowledge.

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