

THE INTENTIONAL DIMENSION OF TEACHERS' KNOWLEDGE OF PEDAGOGY AND ICT IN TEACHING AND LEARNING OF ENGLISH: AN INITIAL INQUIRY

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ABSTRACT

As teacher educators in Malaysia with a commitment to the use of Information and Communication Technology (ICT) in teaching and learning, we live and work in the diverse cultural and political contexts of education and schooling that affect many of our practices and beliefs. How can knowledge and understanding of pedagogy with ICT be constructed by teachers to promote effective teacher education in this field? The Smart Schools initiated by the government to proclaim its priority to increase the use of ICT in Malaysian schools (Smart School Blueprint, 1997) was neatly laid out. All teachers will be expected to show evidence of specific standards in their ICT capability through training given under Smart School Teacher Training Programme. This initial research inquiry focused on 'What is the intention dimension between teachers' knowledge of pedagogy and ICT in teaching and learning of English?' It is this range of theories and beliefs that generate action in the classroom. There are interesting and challenging claims made for the potential of ICT in teaching and learning. The purpose and role of the teacher can be clarified and refined in the context of using ICT (Scrimshaw, 1997a). In order to capture the ICT use intentional dimension portrayal, researcher has used a modified Concern Based Adoption Method (CBAM) (G.E. Hall & S.M.Hord (1987), and Susan Loucks-Horsley (1996) to analyze the level of use of ICT in the innovation among these teachers. In short, the research question changed from 'How does ICT support the development of teaching and learning?' to 'What is the intention between teachers' knowledge of pedagogy and ICT in teaching and learning? The cultural, political, emotional and moral experience of the teacher engaging with teaching and learning in the digitalised approach is admitted. The implications of the research for in-service teacher training and continuing professional development are acknowledged.

Introduction

Government policy for education in Malaysia embraces a positive and progressive view of ICT evidenced by the recent Prime Minister's announcement on the 'Smartization' of all schools in Malaysia. Smart Schools (SS) were initiated by the

government to proclaim its priority to increase the use of ICT in Malaysian schools (Smart School Blueprint, 1997). The comprehensive Blueprint highlighted the modernization of the teaching-learning process, management functions, human resources, technology through the advancement in pedagogy and improvement in ICT and teacher development materials for life long learning. All teachers are expected to show evidence of specific standards in their ICT capability through training given under Smart Schools Teacher Training Programme. The Blueprint reflects a political push for access to information and learning to prepare all students for life long education in the information age. It seems to be assumed and uncontested that the first will lead to the second.

Against the concept of virtual classroom and flexible learning modes is a contradictory rhetoric and policy about the nature of knowledge and pedagogy. The Smart School Curriculum and Assessment framework present a future model of clear subject boundaries and content which can be assessed objectively in order to provide indicators of school effectiveness and performance. The nature of 'teacher knowledge' is addressed in the current Malaysia Smart School Blueprint in the definitions of standards of subject knowledge and teaching strategies. There is a detailed model of a Teacher Training Curriculum and Standards under Smart School Teacher Training programme, both in English Language, Mathematics, Science, and Bahasa Malaysia subjects as well as Information Technology, and in general professional practice. The programme was identified in late 1996 and implemented a year later. It was put under the jurisdiction of Malaysia Ministry of Education (MOE) and its Teacher Training Division was given the task to train teachers for these schools. The training started in 1998 under a project called '*Projek Rintis Sekolah Bestari, KPM, 2000*' (Smart schools' Teacher Training programme). The project was seen as crucial to change Malaysia from an agriculture based economy to an industrialized economy and, be a leader in this Information Age.

In order to make this SS vision a reality it is envisaged that Malaysia will need to make a fundamental shift towards a more technologically literate, thinking work force, who are able to perform in a global work environment and fully utilize the tools available in this Information Age. This fundamental shift inevitably means that the education system must undergo a radical transformation. Based on that precinct, the Malaysian Ministry of Education (MOE) decided that the schooling culture needed to be transformed as it was always lamented that the Malaysian schools put too much emphasis on memory-based learning. MOE believes that it was timely to stress on a more informed, thinking, creative and caring, education through leading-edge technology. It is against this backdrop that SS became one of the flagship applications in the Multimedia Super Corridor (MSC) project.

As Malaysian teacher educators, we have been entrusted in the use of Information and Communication Technology (ICT) in teaching and learning. We live and work in the diverse cultural and political contexts of education and schooling that question many practices and beliefs. There is the potential for ICT

to be the catalyst for significant change in digitalised pedagogy, yet the picture painted and the policies proposed under Smart School concepts are not yet reflected in the experience of many classroom teachers. How can knowledge and understanding of pedagogy with ICT be constructed by teachers, teacher trainers, educational researchers and policy makers to promote effective teacher education in this field?

The Purpose of the Research

The definitions of standard of subject knowledge and teaching strategies, however, has been recently questioned by studies which describe how effective Smart School teachers were distinguished from other teachers, not by the level of previous subject qualifications, but by a particular set of beliefs and understandings, both about the pupils' learning and the subject itself (Lim *et al.* 2001, Hamzah, 2001). The purpose of this paper is to contribute to the discussion of a question which has underpinned a research and development programmes focusing on English Language teachers' pedagogy with ICT in the normal schools. This initial inquiry is focused particularly on the understanding of intention within the context of the general use of ICT by three Smart School trained English Language teachers.

Research Design

This is a qualitative case study of three English language teachers, who were trained in smart school (SS) pedagogy but teaching in normal schools. It is about the intent and beliefs of these teachers with regards to the use of ICT in the Smart school pedagogy they have acquired and their actions in the English language classroom. The three Smart School Trained teachers' intentions revealed in this study constitute the result of active interaction in synthesizing the information (course input) into pedagogical knowledge. For ethical reason, these teachers have been given the pseudonym T1, T2, and T3 respectively. In order to capture the intentional dimension in using ICT, researcher has used a modified Concern Based Adoption Method (CBAM) by G.E. Hall and S.M.Hord (1987) and Susan Loucks-Horsley (1996), to analyze the level of use of ICT in the innovation among these teachers. The modified CBAM contained levels of concern in terms of the intentional dimension in using ICT as outlined in Table 1 below:

Table 1: Indicators of intentional level of Use of ICT innovation

Levels of Use	Indicators of level of use of ICT in innovation
7. Renewal	The user intends to seek more effective alternatives to the established use of the innovation
6. Integration	The user intends to make deliberate efforts to coordinate with the present practice in using the innovation
5. Refinement	The user intends to make changes to increase outcomes
4. Routine	The user intends to make few or no changes and has an established pattern of use
3. Mechanical	The user intends to make changes to better organize use of innovation
2. Preparation	The user has definite intent to begin using the innovation
1. Orientation	The user intends to take the initiative to learn more about the innovation
0. Non-Use	The user has no intent and is not taking any action at all

Research Framework

After further reflection, however, it was acknowledged that this framework did not reflect the complexity of the interaction of these themes in developing pedagogy, nor enable the production of a satisfactory description of the experience of the teachers in trying to meet the many requirements placed upon them in the use of ICT in their work. The research paradigm needed to encompass both an interpretivist approach to the teachers' experience and action, and a critical theory approach to the constraints and contradictions of the requirements placed upon teachers by political and structural systems.

A Revised Framework for Research

The design of the first phase of the Smart School Teacher Training programme had been an attempt to rediscover pedagogy in an 'autonomous' model of techniques and strategies which were not embedded in the cultural context in which values and tensions were made explicit. The position of the researchers looking for a 'good view' of pedagogy also had to change, from the observation and interpretation of an outsider, to a more ethnographic stance of engagement with the teachers' experience and the provision of 'scaffolding' to support the development of action and meaning. In short, the research question was further refined from 'How does ICT support the development of teaching and learning?' to 'What is the intentional dimension between teachers' knowledge of pedagogy and ICT in teaching and learning? Although the methodology used is similar - a qualitative, interpretive approach employing ethnographic techniques, the lens through which the data is seen and interpreted has been refocused. The cultural, political, emotional and

moral experience of the teacher engaging with teaching and learning in the digital age is admitted. The tensions and contradictions in the inputs that influence classroom practice are made explicit and the political structures recognised. The models of knowledge which underpin the current policies determining the form of teacher education do not take into account the contexts in which teachers are being asked to bring about these changes, nor the contradictions in those demands. The implications of the research for in-service teacher training and continuing professional development are shifting from realism to relativism.

The Initial Research Inquiry

Teachers' perceptions and experience of their purpose and practice during educational reform need to be considered. There has been a number of key studies which focus on teachers' personal and professional experience whilst coping with multiple innovations and change in their interpretation of autonomy and professionalism. Indeed, Hargreaves argues,... "while policy rhetoric stresses knowledge and technique as central to good teaching, I draw attention to the importance of purpose, passion and desire. Seeing teacher development in this light, I argue, highlights the central place of moral, political and emotional issues in the field" (Hargreaves, 1995, p9).

Based on this premise, the question of 'What is the intentional dimension between teachers' knowledge of pedagogy and ICT in the teaching and learning of English?' is relevant for discussion here. This line of inquiry arose out of a desire to understand how the knowledge that underpins Smart School Trained English Language teachers' pedagogical practices interact with the knowledge that they bring to their uses of ICT in learning environments. The nature and complexity of describing 'teacher thinking' is recognized, particularly in a national context in which 'teacher thinking' is increasingly defined and prescribed. The effective use of ICT in classrooms is, however, linked to teachers' theories, beliefs and understandings of the subject domain, as well as access to, and competence with, resources (Watson, 1993). It is this range of theories and beliefs that enact action in the classroom. Therefore, models of teacher education for continuing staff development should acknowledge and challenge them in support of the development of pedagogy.

Teachers are influenced by many concerns which differ for example, origins, demands and social impact. This is in contrast to other education policies which describe the curriculum to be delivered, the nature of subject knowledge required of teachers and the teaching strategies prescribed for the raising of standards. The school and classroom may have limited ICT resources, inappropriate for the range of teaching strategies recommended, often contrasting unfavorably with those resources found in some of the pupils' homes as portrayed in Table 2 below:

Table 2: Levels of Use of ICT/TI

Levels of Use	Intentional indicators of level	Smart School Trained English Language Teachers Use of ICT Description
Renewal	The user intends to seek more effective alternatives to the established use of the innovation	None
Integration	The user intends to make deliberate efforts to coordinate with the present practice in using the innovation	8.TI: So, after completing the course, I found that I can only do a little bit of this Bestari teaching in my classes, Form 2C.
Refinement	The user intends to make changes to increase outcomes	10. TI: Such as the KBKK, as for them, I, as that is part of the Bestari teaching is it? , uuuh, creative thinking, is it? And some more, I can only do it with class 2 C and 2 D because they are responsive. The other two classes,
Routine	The user intends to make few or no changes and has an established pattern of use	2.TI: Ah....I feel my role ni lebih pada not....not facilitator la....I banyak give la....daripada...accepting... by giving... it is more like giving....for example is...you know, my students, they don't understand and don't have enough vocabulary....and, so, whenever I buat something new...I'm the one who is to give them the vocabulary....not all the time ah..More givinglah. For example, my students don't understand what I say. So, every time I have to tell them what to say. They all cannot bagi. Not all the time. TI: Sekarang ni, I buat bukan kira Bestari method ka, old method ka, tapi I anggap kalau budak-budak tu dapat, that is goodlah. Haaa..yang itulah effective. (60.)
Mechanical	The user intends to make changes to better organize use of innovation	T1: Effectivelah, bagus dah nampak improvement. Terang-terang. And I nampak memang they enjoy the lesson. You know why? Because macam semalam, masa I bagi kerja tu, I said, ok, teacher nakkan minggu ni, ok, can you please do this. Memang I leave them on their own lah. I tak guide langsung. Lepas tu I dengar budak-budak tu cakap 'ok, mana subject, mana verb, mana object?' Diorang buat memang ikutlah, tak cakap pun. I dengar budak cakap. I memang tengah mark paper. Diorang pun tengah demand markah diorang so kalau nak markah, I cakap, you have to do your work yourselves, without my guidance. So I can mark your papers. Abih tu dah dengar tu diorang each of them, after about half an hour like that, diorang keluar, tau. Bukan sorang tau, ramai yang keluar. " Er..teacher, betul tak?. Er teacher, betul tak?" Bila I tengok balik memang diorang construct. They came to see me. Aaa..ramai...more than half the classlah. Kiranya yang marking pun tak siaplah sebab diorang keep coming out and then bila I check diorang punya structure tu memang. Memang lah ada slight

		mistake, you can understandlah, kan. Ditorang bukan. (56.)
Preparation	The user has definite intend to begin using the innovation	T1: Yet it is not right to say it does not work totally. I still apply the elements of smart school teaching (though not always) in classroom teaching but of course without the computers. (R1.49-50)
Orientation	The user intends to take the initiative to learn more about the innovation	None
Non-Use	The user has no intent, is not taking any action	None

* the data are displayed in their original form. There are some errors in spelling, construction, etc; left uncorrected to retain their originality.

Pedagogy is often described as the science of the art of teaching, and addressed in teacher education as the development of specific teaching strategies and skills. It can, however, be described as a cultural practice (Giroux, 1997) and defined as the 'transformation of consciousness that takes place in the intersection of three agencies - the teacher, the learner and the knowledge they together produce' (Lusted, 1986, in Lather, 1990, p15). ICT could be considered to be a fourth agency, acting as a catalyst for the interaction between teacher, learner and knowledge (Loveless, 1995). Such a view does, however, highlight contradictions and tensions between the pedagogical practices required of teachers in current educational policy and the changes in practice made possible by the use of ICT as portrayed in Table 3.

Table 3: Levels of Use of ICT/T2

Levels of Use	Intentional indicators of level	Smart School Trained English Language Teachers Use of ICT Description
Renewal	The user intends to seek more effective alternatives to the established use of the innovation	None
Integration	The user intends making deliberate efforts to coordinate with the present practice in using the innovation	T2: I try to get the students to use graphic organizers and other worksheets to encourage students to see their critical and creative thinking skills. As I had already learnt about this before attending the Bestari course I feel comfortable using the different skills in this treatment. (41.R2.)
Refinement	The user intends to make changes to increase outcomes	None

Routine	The user intends to make few or no changes and has an established pattern of use	T2: But in actual....sometimes I just look at the immediate task I had to do ah because....a list of content area that I have to cover...the English Language...and I have been away from the school quite often and sometimes my focus is more on that....and I try to eh...to introduce or put in whatever that I have acquired during the Bestari...What I can put in...I. (6.) T2: Even so I used but now I am using a little bit more lah. So now I can roughly, I can tell them, you know, the course requires me to do all that.(26.) T2: Well! It is a revision...and it is thing they are approaching it from a different angle lah from their...how to use it...how to make use it..TV pendidikan or Educational TV programme.(34.) T2: Smart school pedagogy, because ...you are talking about the generic skills, right! And all that. Um...because now I am playing with the smart school and the current listing. So, my style, I haven't really got into smart school. I carry on as it is now because I am using the same syllabus, I mean the old syllabus, and I just bring, play with whatever generic skills, I just brought in the lesson and I get the students to focus on that. Basically my lesson are like that now.(101.) T2: Think on the whole, the easiest one they use the thinking skills, and then you... idea, technological, a lot of study skills, TM or an ICT one in the class I have not done um, I can say that much. In fact I can say close to nil la...Because technology you look at everything la, even the, even the, using the OHP even using the TV , the....um...for that I consider technology la that area.(103.)
Mechanical	The user intends to make changes to better organize use of innovation	T2:The second thing are, I can do like CCTS, then something like self access, like independent learning someone would just, um, give them the internet address, and let them do on their own but they have to make use of their own facilities. Some of them, they will go to class or Cybercafé or CC la. They have their own Hotmail address la.(107.) T2: After returning from the course, I tried to make use of my new knowledge as often as possible. I am not using any learning package for my current lessons, as I can't find the time to prepare a package for other topics in the syllabus. What I have done is basically teaching the generic skills that I am very confident of in my lessons. (36.R2.)
Preparation	The user has definite intend to begin using the innovation	T2: I discovered that as a teacher I would need to make a paradigm shift to keep abreast with the changes and the latest approach in the field of education particularly TESL.(32.R2.) T2: As for the Information Technology generic skill I have only used the television, radio and the overhead projector during any lessons. I have given them the internet address (URL) they could refer to in their home or cyber café. So far I have not got any feedbacks on this. I am not sure of exactly how many students are accessing the given URL's. the multimedia laboratory should have been ready about there have been delays. I hope to use the computers in the room with my students during my English

		lessons.(59.R2.) T2: As for the area of smart learning management I have tried the learning strategies in moving from directive to meditative. I tried to refer to MI Theory when planning activities and upon reflection I find that perhaps the activities catered for verbal linguistics, mathematical, spatial/visual and interpersonal. I need to provide activities for the areas such as interpersonal and individualistic, musical/musical. But when I look at the curriculum from a macro-level I believe there are different subjects for the various MI's. (74.R2.)
Orientation	The user intends to take the initiative to learn more about the innovation	T2: Now...now because actually there is some other people who are also in private education and all that, they are saying that he latest style in educational circle now is MI (Multiple Intelligence), lesson planning is based on that so when I look at that and try to incorporate that ...I feel That...maybe some areas that for some may be my styles of teaching caters students with certain characteristic that are dominant lah...whereas the other we have 8 right. May be students whose dominant characteristics in other areas...may be like musical or what...because may be I am more on verbal linguistics and maybe a little bit of spatial, other things...(65.)

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The potential for ICT to enhance, extend and change the role of the teacher can be perceived as an exciting opportunity or an arm twisting threat. Amongst these contrasting concerns within the educational systems, there is the teacher's own sense of professional purpose, competence, values, relationships and emotions. The demands for innovation and change can therefore be difficult, contradictory and confusing as portrayed by the teacher in Table 4 below.

Table 4: Levels of Use of ICT/T3

Levels of Use	Intentional indicators of level	Smart School Trained English Language Teachers Use of ICT Description
Renewal	The user intends to seek more effective alternatives to the established use of the innovation	None
Integration	The user intends to make deliberate efforts to coordinate with the present practice in using the innovation	None
Refinement	The user intends to make changes to increase outcomes	None
Routine	The user intends to make few or no changes and has an established pattern of use	None
Mechanical	The user intends to make changes to better organize use of innovation	None

Preparation	The user has definite intent to begin using the innovation	None
Orientation	The user intends to take the initiative to learn more about the innovation	T3: The Bestari course gave me new ideas on the various interesting ways to carry out activities during English Language lessons so as to enable me to achieve my lesson goal. From the beginning I had to come to terms that I will not be able to use the computer as a classroom tool as I had done during my Bestari practical due to physical constrain i.e. the computer lab was too small to accommodate a class with an enrolment of 35 to 43 on a long term basis. As such was the case, I carried out activities that did not require the computer as a tool.(1.R3.) T3: To be honest, after nearly more than a year since attending the Bestari course I find that other than the 'self-assess' learning strategy, I am unable to carry out the 'self-directed and self-paced' learning strategies that were advocated to me during the course.(39.R3.)
Non-Use	The user has no intent, is not taking any action	T3: Yeah!! Because I have not after giving it to them, you know, I am not moved forward because by that time their exam came and all that. So, actually now I am supposed to get back what they have done. So, I will continue with that lah.(14.) T3: Oh, you know, actually Bestari is something like KBSR. I have been doing it when I was I the primary school, many years back. So, it is just like throwing in it into. So, it becomes Bestari lah. It is basically the same thing what.(132.) T3: IT tarak...hanya card. (134.) T3: Yes, that's right, first few months....we are even doing the...what you call...the practicum...so fresh but this is...look...this is almost how long already, one year?(142.) T3: I just forget...we all the while we think and once we...use the computer...why? why? Because we started using the computer again, so we could use the computer and then clashes of classes, too many students....and then all the tables and chairs...(150.) T3: It I sort of faded...(152.) T3: Well! Form 2...I have 5 classes, you know...5 classes of English, ah, is very hectic, number 1, number two I have to get to know the syllabus again, peralihan I had the experience teaching...get to know the syllabus again. Then, after that...why...just slowly it faded away and nothing to do...ah...is this something new...not the same approach whatever...(166.) T3: More often than not, sometimes I also find myself carrying out my lessons the 'preBestari course' way which I am sure will have my Bestari course lecturers shaking their heads if they come to know about it.(36.R3)

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There are many interesting and challenging claims made for the potential of ICT in teaching and learning. The purpose and role of the teacher can be clarified and refined in the context of using ICT (Scrimshaw, 1997a). The Smart School Learning

Management Systems, whilst reflecting a constructivist model of learning, have been demonstrated to provide opportunities for teachers to develop their use of diagnostic tools and change their practice (Smart School Teacher Training Programme, 1998). It would bring changes to teacher's practice especially in terms of the place of practice and the time used in teaching. Teachers may become 'multipurpose' in which they play many roles via contexts – home schooling, electronic conferencing and flexible learning spaces (Davis, 1997, Kenny, 1997, Meisalo *et al.*, 1996).

ICT can enhance existing pedagogy, from providing opportunities to develop composition in writing to developing on-line/digitised skills. The presence of the ICT resources and applications in themselves are not sufficient to promote or challenge understanding and effective capability with ICT depends not on skills, but on the context in which the experience is embedded. Indeed, innovative teachers use ICT in innovative ways (Watson, 1993).

There is a long research tradition in TESL focusing on teaching skills and classroom management to promote higher order interactions between learners and teachers. The current focus is on seven learning strategies (directive, generative, meditative, observational, collaborative, outside context and metacognitive) an interactive whole class teaching utilized by the Smart School Trained English Teachers, which is more teacher-centered and directed. These developments, whilst providing the opportunity to look afresh at 'fitness for purpose', contrast with the picture of flexible learning associated with a constructivist approach to the use of ICT.

Conclusion

The debates about the impact of ICT in Malaysia are well rehearsed. Our society recognizes the impact of ICT in the economic, educational, social and personal lives of its members and much use is made of terms such as 'The Information Highway Society', 'Virtual Reality' and 'Cyber Culture'. The definition of these terms are not always clear and the images and expectations that they evoke are problematic, addressed in debates about new literacies, new relationships and new visions of the post-industrial society. Anxieties are expressed about the ways in which ICT can be used for controlling information, surveillance, marketing, invading privacy and models of intelligence. Cyber Culture is, however, also celebrated as providing opportunities for communication and collaboration between communities and previously marginalized groups; for blurring the boundaries of communities and individual identities, and providing new representations of knowledge. The information age is usually presented as good, desirable, inevitable and embodied in our children.

References

- Alexander R. 1996. In search of good primary practice in Woods, P. (ed.) *Contemporary issues in teaching and learning*. London:Routledge, pp57-72.
- Allwright, D. 1972. 'Prescription and description in the training of language teachers'. In J. Ovistgaard, H. Schwartz and H. Spang-Hanssen (eds.). *Applied Linguistics: Problems and solutions. AILA Proceedings*, vol.III: 150-66, Copenhagen. Heidelberg: Julius Groos Verlag.
- Allwright, D. 1996. *Teaching Classroom Learning Strategies: Some Considerations*. In APLIUT, Lancaster University.
- Clark, C. M., & Peterson, P. L 1986. Teachers' Thought Processes. In Wittrock, M.C.(eds) *Handbook of Research on Teaching*. 3rd. edition. A project of the American Educational Research Association. N.York: MacMillan.
- Davis, N. 1997. Do electronic communications offer a new learning opportunity in education? in Somekh, B & Davis, N. (eds) (1997). *Using Information Technology Effectively in Teaching and Learning*. London:Routledge.
- Eisner, W. 1998. The Enlightenend Eye. *Qualitative Inquiry and the Enhancement of Educational Practice*. Prentice Hall: US.
- Freeman, D. 1989. Teacher training, development and decision making model: A Model of teaching and related strategies for language teacher education. *TESOL Quarterly*, 23: 27 - 45.
- Giroux, H.A. 1997. *Pedagogy and the Politics of Hope: Theory, Culture and Schooling*. Oxford:Westview Press.
- Hargreaves, A. 1995. Development and Desire: a postmodern perspective in Guskey, T.R. & Huberman, M. (eds) (1995) *Professional Development in Education: New Paradigms and Hewson, P., and M.Hewson. (1989). Analysis and use of a task for identifying conceptions of teaching science. Journal of Education for Teaching* 15(3): 191-209.
- Juraida Umat.2000. Web-Based Dissemination and Utilization of Learning Resources: TIGERWeb PROJECT. A Paper Presented at the Asia and the Pacific Seminar/ Workshop on Educational Technology - 2000 (Tokyo Seminar / Workshop 2000): Seminar/Workshop on 'The Development and the Utilization of a Learning Resource Package to Promote the Open and Flexible Lifelong Learning' - Sixth Programming Cycle of APEID Activities.6 - 12 September 2000. Tokyo Gakugei University, Japan.
- Kansanen, P.1993. An Outline of a Model of Teachers'Pedagogical Thinking. In P.Kansanen (ed.) *Discussions on Some Educational Issues IV* (pp. 51 -65) *Research Report 121*. Department of Teacher Education, University of Helsinki. (ED366562)
- Kementerian Pendidikan Malaysia. 1997. *Laporan kursus, program latihan yang berkesan*. Kuala Lumpur: Bahagian Pendidikan Guru.

- Kementerian Pendidikan Malaysia. 1998. *Huraian Sukatan Pelajaran Bahasa Inggeris KBSM Edisi Sekolah Bestari*. Kuala Lumpur: Dewan Bahasa dan Pustaka.
- Lee S. Shulman, 1986. Knowledge and Teaching: Foundations of the New Reform, in Teachers, Teaching, and Teacher Education, ed. M. Okazawa-Rey, J. Anderson and R. Traver (Cambridge: Harvard Educational Review, 1987), 313-34; Those Who Understand: Knowledge Growth in Teaching, *Educational Researcher* (February, 1986): 4-14.
- Loveless, A. 1995a. *The Role of IT: practical issues for primary teachers*. London: Cassell.
- Loveless, A. & Longman, D. 1997. *Information Literacy: innuendo or insight?* Paper presented at British Education Research Association Conference, York, 1997. [on-line] Available at: <http://www.leeds.ac.uk/educol>.
- Richards, J.C. 1987. The dilemma of teacher preparation in TESOL. *TESOL Quarterly*, 21(1), 209-226.
- Richards, J.C., & Crookes, G. 1988. The practicum in TESOL'. *TESOL Quarterly*, 22(1), 9-27.
- Richards, J.C. 1990. The Dilemma of teacher education in second language teaching. In Richards, J.C. & Nunan, D.(eds.) *Second Language Teacher Education*. New York: Cambridge University Press.
- Richards, J.C. & Nunan, D.(eds). 1990. *Second Language Teacher Education*. New York: Cambridge University Press.
- Richards, J.C., Belinda Ho, & Karen Giblin. 1996. Learning how to teach in the RSA Cert. pp. 242 - 259. In Freeman, D & Richards, J.C. 1996. *Teacher Learning in Language Teaching*. Cambridge: CUP.
- Rorty, R. 1991. Objectivity, *Relativism and Truth: philosophical papers* Vol. 1 New York: Cambridge University Press.
- Scrimshaw, P. 1997a. Computers and the teachers' role in Somekh, B. & Davis, N. (eds). *Using information technology effectively in teaching and learning*. London: Routledge.
- S.M.Hord, W.C. Rutherford, L. Hurling-Austin & G.E. Hall. 1987. Taking Charge of Change. *The Association for Supervision and Curriculum Development* (703) 549-3110.
- Smith, L. 1980. Some not random thoughts of doing fieldwork: the interplay of values' in SIMONS, H. (ed.), *Towards science of the singular*. Norwich: CARE pp.179-205.
- Smith, J. 1997. Learning to Live with Relativism Paper given at national conference on *The Nature of Educational Research: Realism, Relativism or Post-Modernism?*, held at Crewe School of Education, Manchester Metropolitan University, 10th May, 1997.
- Susan Loucks-Horsley. 1996. *National Standards & the Science Curriculum*. (Eds.) Iowa: Kendall.
- The Malaysian Smart School. April, 1997. An MSC Flagship Application. A Conceptual Blueprint. Smart School Project Team.

- Tomlinson, P. 1999. Conscious reflection and Implicit Learning in Teacher Preparation. Part 1: recent light on an old. *Oxford Review of Education*, Sept. 99, Vol. 25 Issue 3, p406.
- Underwood, J., Cavendish, S. & Lawson, T. 1996. Are Integrated Learning Systems Good for Teachers Too? *Journal of Information Technology for Teacher Education*, 5 (3), pp207 – 218.

APPENDIX

Malaysian Smart Schools

Conceptual Model

The Malaysian Smart School is a learning institution that has been **systemically** reinvented in terms of teaching - learning practices and school management in order to prepare children for the Information Age. A Smart School will evolve over time, continuously developing its professional staff, its educational resources, and its administrative capabilities. This will allow the school to adapt to changing conditions, while continuing to prepare students for life in the Information Age as foreseen by the former Minister of Education, Dato' Seri Mohd Najib bin Tun Haji Abdul Razak:

"Life in the 21st century promises to be filled with the need to frequently adjust to change. Education should prepare children to cope with changes rather than become dependent to habits. In other words, education for future should place less emphasis on acquiring knowledge that is transient and focus instead on developing creative and thinking minds."

The Main Components

a) Teaching - learning processes

The teaching - learning processes are the core of the Smart School. The processes relating to curriculum, pedagogy, assessment and teaching-learning materials will be reframed to help make lesson delivery more effective, efficient, and meaningful resulting in fuller realisation of students' capabilities and potentials, and allow them to take greater responsibility for their own learning.

b) Smart School Management

The primary objective of the Smart School management system will be to manage efficiently and effectively the resources and processes required to support the teaching-learning functions. The management and administration will be computerised. It will help to define the school's goals clearly, lead teaching at the school, and elicit strong parental and community support.

c) *Smart School Processes*

For a Smart School to achieve its educational objectives, its internal processes must be co-ordinated. Ensuring coordination entails viewing these processes as a **system**. For the Smart School system, the major inputs are the resources - students, teachers, technology and tools - and the Ministry of Education, in the form of curriculum specification, financing, and management and control functions.

d) *Technology Enablers*

Technology alone will not make a school smart. Only improved teaching-learning strategies, management and administrative processes, and capable, well-trained personnel with enthusiasm can help materialize the smart school goals. With the introduction of ICT, the process of transforming the existing schools into Smart Schools can be expedited. Consequently, a nation-wide system of Smart Schools will depend on advanced ICT at the school, district, and national levels. Some of the technology that can be found in Smart School might include the following:

- Classrooms with multimedia courseware and presentation facilities, and e-mail or groupware for collaborative work.
- Library/Media Center with database center for multimedia courseware, and network resources like access to the internet.
- Computer laboratory for teaching, such as Computer Studies as a subject, and readily accessible multimedia and audio-visual equipment.

e) *Policy Implications*

Successful implementation of Smart Schools in Malaysia will be a complex task, requiring changes to existing policies, procedures and practices, both written and unwritten. It may require formulating entirely new policies and regulations. Areas to be addressed include teaching-learning process, management functions, human resource, and technology.

The Smart School concept is a work in progress and it remains open to evolutionary refinement, including advancement in pedagogy and improvement in ICT.