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## CONTINUITY AND CHANGE



On 20 October, Mr Chiang Chie Foo, Second Permanent Secretary, Ministry of Education, and Chairman, NIE Council, addressed NIE staff on the topic "Continuity and Change". Below is the full text of his address.

### INTRODUCTION

I have asked all of you here today principally to share with you the rationale behind the recent change in NIE Council chairmanship, and some thoughts on how we should develop NIE into a teacher training institute of distinction over the next few years. I have been briefed by the various schools in NIE over the past two months, and therefore have some feel of what is going on. I would need to increase my understanding by meeting you in smaller groups, over a period of time.

This morning, I have chosen to talk about "Continuity and Change" because in my view, it captures very aptly the challenges facing our education system and in particular, NIE.

### CONTINUITY

First, let me touch on Continuity. The teacher is key to everything we do in Education. To mould our young into good and useful citizens, our teachers need to have the right skills, values and mindsets. Teacher training prepares teachers to do their job well. We have a teacher training system that we can be proud of. Each year, about 1500 full-time trainee teachers graduate from NIE, and another 2400 serving teachers benefit from various part-time courses run by the institute. This is no mean feat. Many NIE staff, past and present, have contributed to make NIE what it is today.

There are many inherent strengths in our teacher training system that we would want to retain even as it evolves to meet the demands of a changing environment. NIE's positioning as an independent university institute under NTU is fundamentally sound. It enables NIE to promote teacher education to degree status; attract and retain good staff; and offers synergies and economies of scale in terms of resources and facilities.

NIE's internal structure, comprising the School of Education, School of Science, School of Arts and the School of Physical Education, has served us well. We would not only want to retain these four schools - but possibly add on to them. NIE's programmes, ranging from short courses to diploma, degree and postgraduate programmes, provide good breadth and depth to meet MOE's needs. Again, we would want to continue with and build upon existing programmes.

I do not believe in change for the sake of change. We have to be convinced that doing so will put us in stronger position, and that we do not inadvertently throw away the good things about the current system.

### CHANGE

So let me move on to Change. NIE's mission states that as the sole teacher training institute, its primary concern is to train teachers and school leaders to meet Singapore's needs. To do so, NIE must be able to keep in step with MOE's thinking and the changes taking place in schools.

### CHANGES TAKING PLACE IN OUR EDUCATION SYSTEM

As we look into the future, there are three key trends that are apparent. The first is globalisation. The world is becoming increasingly interconnected and hence more intensely competitive. Second, rapid technological change is changing the way people live and work, so individuals must possess lifelong skills, be re-trained, re-skilled, re-tooled to adapt. Third, intellectual capital which is basically the sum of knowledge, skills and values embodied in an organisation, will increasingly become the main basis for competitive advantage.

What these trends mean for our education system is that we must seek to develop the different talents and abilities of our students to the fullest, while inculcating in them certain core skills and values. By doing so, we maximise Singapore's intellectual capital and our chances of succeeding in the league of developed nations in the 21st century.

Some of you who have attended the recent MOE Workplan Seminar would have been introduced to the idea of a paradigm shift from our present efficiency-driven education system to ability-driven education system. Others who have not attended the Work Plan Seminar would see it on the October version of the NewsTeach videotape. I will not go into details on that. The January NewsTeach will elaborate even further on the ability-driven education paradigm. What I would like to say is really that unlike the current system where with a crank of the shaft, we produce the engineers, accountants, doctors etc that we need, the future will be about how graduates from our education system can capitalise on their intellectual capital. They would not only need to be

able to use the knowledge they learnt either from their teachers, or source on their own (more and more so on their own as the Internet provides the platform for easy access and sharing). They would have to create knowledge and use the newly created knowledge innovatively and effectively.

We will need a different approach to the way we manage schools. In the past, when we were building up our education system, we adopted a highly centralised approach to decision making. Once decisions were made, they were implemented across the system - a "one-size-fits-all" approach. We recognise that a highly centralised mode of operation will no longer be appropriate in future, under an ability-driven paradigm, because our Principals and teachers will be in a far better position to cater to the different learning needs of their students.

So increasingly, we would want to give schools more autonomy in delivering the curriculum and in allocation of resources to achieve our Desired Outcomes of Education.

### NEW CHALLENGES FOR TEACHERS

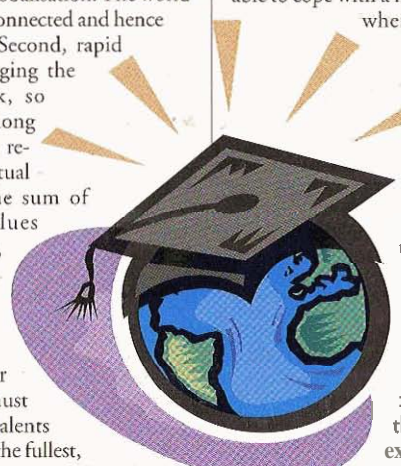
What will all this mean for our teachers? Our teachers will face new challenges. First, they will need to be able to cope with a new type of learning environment where the teacher may not always know more than their students. He or she must be prepared to explore, experiment and learn together with the students. This is a departure from the current situation where teachers feel in control because they know more than their students.

Secondly, teachers will be given greater autonomy to exercise their initiative in the way they deliver the curriculum. But to make the most of this autonomy, they must not be afraid to question existing assumptions and change their way of doing things. And thirdly, our Principals and teachers will need to actively engage parents a lot more than is currently the case, in order to develop their students holistically, particularly in the area of values education.

At present, many of them do not have the confidence to do so. This has to change. As you can see, a lot will be expected of every teacher. Our teachers must change. Teacher training is a powerful tool to bring about this change, by equipping teachers with the necessary skills and the right outlook.

### VISION

I would like to share with you our vision for NIE and highlight some of the key areas that NIE needs to focus on in order to achieve this vision. Our vision is to develop NIE into a teacher training institute of distinction - the home of the teaching profession where teachers return periodically to imbibe values



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and skills that set them apart as professionals called to the task of moulding the future of our nation.

To realise its vision, NIE needs to pay particular attention to three main areas, namely:

- Values education and attitude shaping for teachers
- NIE's role in providing continual teacher training
- Linkages with MOE

#### (A) Values Education for Teachers

Values education and attitude shaping must be central to our entire framework for teacher training. An organisation, no matter how well designed, is only as good as the people who live and work in it. They can be no more or less than the sum of the beliefs of the people drawn to them: their character, judgements, acts and efforts. The key to success for most organisations has enormously more to do with clarity of shared purpose, common principles and strength of belief in them than to assets, expertise, operating ability or management competence, important as they may be.

The principles they practice are intriguingly simple: they hire, develop and promote people first on the basis of integrity; second, motivation; third, capacity; fourth, understanding; fifth knowledge; and last and not least, experience. Without integrity, motivation is dangerous; without motivation, capacity is impotent; without capacity, understanding is limited; without understanding, knowledge is meaningless; without knowledge, experience is blind.

I believe the same principles apply to how we should manage our teachers. This is why values education and attitude shaping for teachers is so important. We must, first and foremost, imbue them with the values and instincts required of teachers in Thinking Schools. This is especially critical at the foundation training stage. If newly-trained teachers do not start out on the right footing, it will be difficult later on to change their attitude and outlook.

Given the limited duration of foundation teacher training, the challenge for NIE is to prioritise what is most essential, and structure the delivery of its training such that some components can be delivered as part of continual training.

Besides greater emphasis on values education and attitude shaping for our teachers, the way in which NIE lecturers interact with trainee teachers is also important. It influences teachers' behaviour and the way they look at themselves and at MOE.

#### (B) NIE's Role in Continual Teacher Training

Continual training will play an increasingly important role in our society as a whole. For the teaching service, we want our teachers to continually upgrade themselves, so as to stay current in their respective fields of specialisation. We also want to put in place an accreditation system that will allow teachers to chalk up credits and work towards higher qualifications. This will provide a major boost to the status and morale of the teaching profession.

This has two important implications for NIE. First, NIE will face greater demands for continual teacher training in future. At present, the training load on NIE is roughly divided in the ratio of "80:20" - 80% Foundation Training and 20% Continual Training. This has to change. With a burgeoning teacher population, and more teachers pursuing in-service upgrading, we envisage that Continual Training will rise to about 40% or even 50%. This will have a major impact on the way NIE should structure its programmes, and allocate its resources, in order to

balance its dual role as a provider of Foundation and Continual Training. NIE is not alone in this. All our tertiary and post-secondary institutions are moving in this direction, to become providers of education not just to school-leavers but to professionals and practitioners.

Second, continual training will need to be more modular in nature so that serving teachers can take in-service courses in "small bites" and gain credits for each module. Given the anticipated increase in continual training load in future, and the fact that NIE will be located in Jurong, it will also need to build up its capacity to deliver distance learning so as to minimise inconvenience to teachers as well as to conduct school-based customised training.

#### (C) Strengthening the Linkage between NIE and MOE

MOE is committed to giving NIE her full support, as NIE makes changes to re-position itself for the future. But NIE and MOE will need to work more closely together than before. This is the reason why the Minister for Education has appointed me to take over from President, NTU as NIE Council Chairman. Dr Cham has played a major part in building up NIE, and will continue to play a key role in NIE's long-term development, as President, NTU of which NIE is a part.

We are now embarking on a new chapter in our "Education Story". My role is to build upon the foundation that he has put in place and to further strengthen the nexus between NIE and MOE, so that all the different components of our education system keep in step and work synergistically with one another.

In this regard, I think it would be useful to establish certain mechanisms to bring about more regular exchanges between senior MOE officers and NIE staff. We have started to move in this direction with the appointment of Director, NIE to the MOE Ministerial Committee since October last year. We have also invited senior NIE staff to the recent workplan seminar, over and above representatives from NTU. But I think even more can be done to enhance interaction between NIE and MOE staff. I have asked Director, NIE to initiate sessions where, PS (Education), myself, DGE or other MOE directors could come and share with you MOE's long-term thinking on various issues.

It is no secret that the Minister for Education himself and Dr Aline Wong, Senior Minister of State both have deep interest in what is happening in NIE. They too would like to meet with NIE staff. Through these sessions, we hope that you will acquire a better understanding of why certain decisions or changes are made. This is a two-way process. In turn, we would like to hear your views on the development of education policy. You have a wealth of experience from your research in pedagogy, as well as from dealing with teachers on a daily basis. We have started a similar forum in MOE where all Deputy Directors and Assistant Directors come together once a month to discuss different topics, and it has been well received.

I hope that the same sort of frank exchange of ideas and views can become part of the culture here at NIE. At the "working" level, I think it would also be useful to have a joint Task Force set up to tackle operational issues, for example, pertaining to recruitment and training capacity. We have in fact done this for the recent increase in teacher recruitment. I see value in institutionalising such a coordinating mechanism, so that we are aware of each other's concerns and constraints, and are able to resolve issues in a timely and efficient manner.

#### PERSONNEL AND FUNDING ISSUES

To achieve its goals, NIE will need a good team of

academic and non-academic staff. It must be able to attract and retain good people, and develop them to their full potential. A proper system of personnel planning and succession planning will have to be put in place. I see benefits in posting NIE staff to MOE HQ to widen their exposure. Likewise, some of our teachers could be posted to NIE as part of their career development.

I have discussed with President, NTU on the management of personnel matters for NIE. As NIE is part of the university, it is important and necessary that the President of NTU be involved in the selection, appointment and promotion of its academic staff. President, NTU will continue to serve as the Chairman of the NIE Establishment Committee. I, as Chairman of NIE Council, will work with the NIE administrators to improve the current system of appraisal for NIE staff.

Like NTU staff, NIE staff should also be engaged in research. But your research should be practical-biased with real school applications. Like NTU staff, you also have teaching responsibilities. But the teaching responsibility has a much more critical impact on the future of the country. Because collectively, you are the most critical resource that will make a difference to the learning environment in the classroom. The appraisal system for NIE staff must therefore adequately reflect these priorities, in order that MOE's needs, as the major client of NIE, are met. The appraisal system for you will be a separate system, and no attempt will be made to merge it with the NTU system.

No system can prepare for the future without any investment put in it. A training institute like NIE needs to do its fair share of research to enable it to remain at the forefront of new developments in Education. I am pleased to announce that MOE intends to carve out a separate research fund for NIE to finance projects of interest to MOE and of value to the education system in Singapore. This is the most direct way of applying the wisdom and knowledge of NIE staff to shape and influence policy thinking in MOE.

#### INTERNATIONAL ADVISORY PANEL

Last but not least, to be a teacher training institute of distinction, NIE must constantly be open to new ideas and keep herself attuned to new developments in teacher education around the world. One "quick" way to tap on the wisdom and experience of others is to set up an international advisory panel of distinguished persons from well-known teacher training institutes, as what we have done for the Universities.

But first, I think we must decide internally how we see NIE's role evolving in future to meet the changing demands, and have a sense of what we need to do in real terms. To this end, I would be discussing with your Director to develop a strategic plan for the development of NIE. The NIE Council will also be involved in this process. Your views and active participation will be sought in the process of formulating this plan. Only when this plan is formulated, would the advisory panel of distinguished persons be able to add value to our vision to position NIE as an institute of distinction.

#### CONCLUSION

I would like to end with a personal observation. When I took over as NIE Council Chairman, I was very glad to see that many positive changes were already taking place to re-position NIE for the future - one such example being the increasing use of IT in the NIE curriculum. It shows that NIE staff are forward looking and able to adapt. I look forward to working with all of you to make NIE a world-class teacher training institute, and I am confident that, together, we will succeed.

# LEARNING ORGANISATION

## - IDEAS TO SHARE

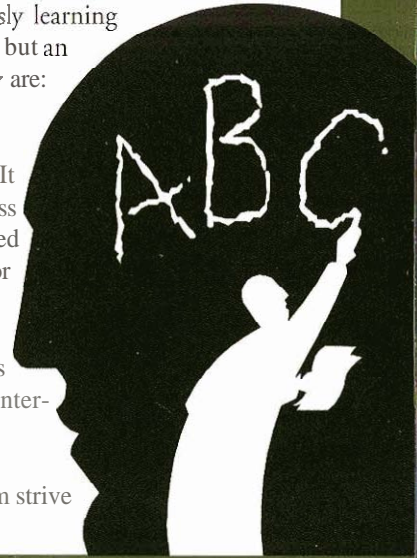
On 17 and 18 November 98, a seminar on "The Learning Organisation- Ideas to share" was conducted for NIE staff by Mrs Ding Seok Lin, Consultant to the Organisation Development Division of the Ministry of Education in its "Thinking School, Learning Organisation" project.

From Mrs Ding, we learnt that a learning organisation is a place "where its people are continuously learning together on how to enhance their capacity to create the future they want to see". It is not a methodology but an outcome that all will work towards. The building of a learning organisation involves four steps. They are: people, process, skills and structures and systems.

We also learned that the quality of relationships amongst people in the organisation is important. It includes personal, inter-personal, team, organisarion and inter-organisation relationships. In the process of building a learning organisation, a shared vision for the organisation has to be developed. This shared vision should have meaning to every individual in the organisation in order to achieve that vision. For NIE, its vision has to take into account the goals at the national and education sector levels as well.

Core skills such as personal mastery, building shared vision, mental models, team learning and systems thinking are also crucial. The systems and structures of a learning organisarion will depend on the inter-relationships between key variables which influence behaviour.

On the whole, NIE staff felt they gained some useful insights from the seminar which would help them strive towards making NIE a learning organisation.



# THE SINGAPORE OLYMPIC ACADEMY'S

## 'ROLL OF HONOUR'

Sports excellence, sports administration skills, and the demonstration of Olympian ideals are now being recognised amongst members of the physical education profession. Graduates of the School of Physical Education (SPE) and the former College of Physical Education (CPE), who excel in these important areas of sport promotion, are eligible for a special award, the Singapore Olympic Academy's "Roll of Honour" under a new scheme initiated by the Singapore Olympic Academy.

Six recipients received a record of their induction at the annual session of the Singapore Olympic Academy held on 16 November 1998 at the NTUC Resort, Sentosa. Mr Abdullah Tarmugi, Minister for Community Development presented the awards to the recipients.

Nominations, based on one or more of the following three criteria were submitted by faculty members of SPE:

- Representation of Singapore at the SEA Games or an equivalent competition;
- Contribution to the management or administration of sport on a national basis;
- Demonstration of qualities associated with the broader educational aims of Olympism.

From a shortlist of 13 nominees, faculty members of SPE inducted six graduates (please see box) to the Singapore Olympic Academy's (SOA) "Roll of Honour". Inductees were former students, who had graduated since the inception of the College of Physical Education in 1984. These recipients now represent the first in a line of role models specifically for young PE teachers. Significantly, all are still teaching

and all have been able to attain high levels of success in their respective areas.



### LIST OF RECIPIENTS FOR THE SINGAPORE OLYMPIC ACADEMY'S ROLL OF HONOUR

ACHIEVEMENT	
1. Leong Chee Mun	Everest Expedition
2. Foo Yong Lai	SEA Games Gold (Taekwondo)
3. M. Rameshon	National Record (Marathon)
4. Mah Li Lian	Asian Champion (Squash)
5. Lee Wung Yew	Commonwealth Record (Trap Shooting)
6. Noraida Binte Abdul Malik	World Championships (Netball)



## 1. INTRODUCTION

Blood vessels often bend and curve as they traverse around organs. It has been shown that such bends and curvatures in arteries are one of the preferred sites of predilection and may be an important factor in the pathogenesis of arterial diseases [12]. Therefore, it would be desirable to develop a curved artery model with stenoses, and examine their effects on the flow conditions.

While many models of blood flow have been developed, few had looked into the effects of stenoses in curved tubes. Sabbah *et al* [11], Back *et al* [5] and Altobelli and Nerem [1] performed experiments to study flow in curved tubes. These experiments have shown that the flow conditions are significantly altered by the presence of curvature. Perktold *et al* [10] developed a model of flow in a slightly bent tube with very gradual tapering and demonstrated the presence of secondary flow phenomena.

Padmanabhan and Jayaraman [9] constructed a model of flow in a curved tube with constriction and, using a perturbation method, produced an analytical solution to their model. However, their method of solution can only handle flow with low Reynolds numbers ( $Re = 20 - 100$ ). Furthermore, their model has assumed an axially symmetrical stenosis. Asakura and Karino [4], in their modelling study using flow visualisation techniques, observed that the asymmetry in the stenoses at bends and bifurcations has a significant effect on flow conditions.

The present study is an extension of one of our models in a series of studies carried out in this area. In our previous model, an asymmetric stenosis in a straight artery was constructed in three dimensions [2]. In this study, we have developed a model of blood flow through a curved artery with stenoses. The model is made realistic by assuming that the stenoses on the curved portion are not necessarily symmetric. Models of flow in curved tubes so far have been limited to either no stenosis at all or only very mild stenosis. In our study, we shall consider cases of up to about 70% stenosis for Reynolds number ranging from 100 to 200.

## 2. THE MODEL

Figure 1 below shows the general geometrical form of the model developed in the present study.

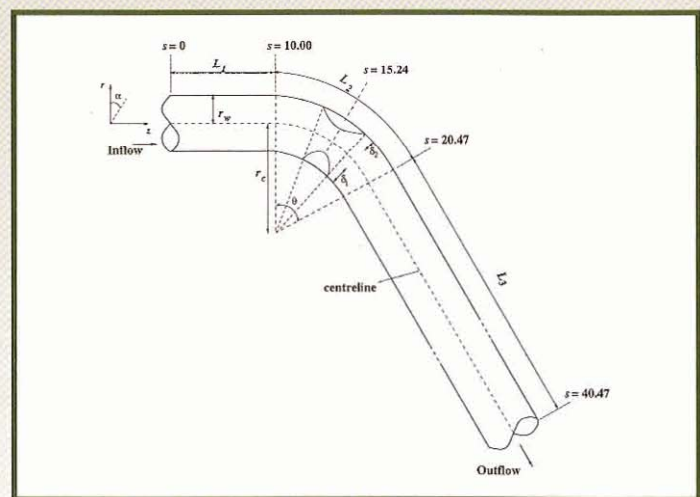


Figure 1. Geometrical representation of the Curved Artery Model with non-symmetric stenoses.  $s$  is the dimensionless distance measured from the entrance, along the centreline. The throat of the stenosis is at  $s = 15.24$ .

As we shall be using the computer code, PHOENICS, to generate the model, the body fitted coordinate system  $(r, \alpha, z)$  is used for the purpose of describing the model and presenting the results. In this system,  $r$  is the radial distance from the centreline of the vessel,  $\alpha$  is the angle subtended from the vertical, and  $z$  represents the axial coordinate from the entry point following the shape of the centreline.  $r_w$  and  $r_c$  are the radius of the tube and the radius of curvature respectively, and  $\theta$  is the angle of curvature as shown in the figure.  $L_1$  and  $L_2$  are lengths of the tube prior to and immediately after the bend.  $L_2$  is the length of the curved portion.

The stenoses are situated centrally on the bend. In general, stenotic plaques can grow from either side of the wall.  $\delta_1$  is the height of the protrusion from the inner side wall (ie. inner side of the bend) and  $\delta_2$  is that from the outer wall.

As can be seen from the description of the model above, there are a number of geometrical parameters that can be varied. In this study, we wish to concentrate on the effects of non-symmetric stenoses in curved arteries on blood flow and have hence kept some of these parameters fixed.

# MODELLING BLOOD FLOW THROUGH CURVED ARTERIES WITH ASYMMETRIC STENOSES

By K. C. Ang, School of Science

The governing equations for the flow are the full Navier-Stokes equations from a Newtonian fluid. This is justified as the non-Newtonian effects only become significant in vessels with a diameter of less than  $500\mu m$ . In all our models, we have set the radius of the unobstructed part of the artery,  $r_w$ , to be  $1mm$ . We have also assumed the tube to be rigid as it has been shown that for a stenosed artery, elasticity effects are negligible [8]. At the vessel walls, the no slip and no penetration conditions apply.

The angle of curvature,  $\theta$ , is fixed at  $60^\circ$ . This is a reasonable value for a typical coronary artery. Also,  $\lambda$ , defined as the ratio of  $r_c$  to  $r_w$ , is fixed at approximately 10. Hence, the length of the curved segment,  $L_2$ , is fixed at around  $10.47mm$ .

The length of tube downstream from the curvature is chosen to ensure that a fully developed flow is re-established. After some preliminary studies, it was decided that  $L_3$  could be fixed at around  $20mm$ . All lengths are non-dimensionalised with respect to the radius of the vessel ( $r_w$ ) and  $s$  represents the dimensionless distance from the entry point along the vessel. In Figure 1, the values of  $r$  at certain points of interest are shown.

The model is solved using the Computational Fluid Dynamics code, PHOENICS, which utilises the Finite Volume method of solution. Three groups have been set up: Group A models a curved artery without any constriction, Group B models a protrusion from the inner wall of the curvature and Group C models protrusions from both the inner and the outer walls of the curvature. Varying degrees of stenosis have been modelled and Table 1 shows the set of models presented in this study. Models B5 to B10 have been set up to have the same percent stenosis as Models C1 to C6.

In all cases, the unobstructed radius,  $r_w$ , is  $1mm$ . The stenotic length of the inner stenosis is approximately  $3.14mm$  and the outer stenosis, if present, has a length of about  $3.84mm$ .

Model	$\delta_1$	$\delta_2$	% Stenosis
A	0.0	0.0	0
B1	0.8500	0.0	40.49
B2	1.0500	0.0	53.18
B3	1.2500	0.0	65.75
B4	1.4500	0.0	77.65
B5	0.9039	0.0	43.89
B6	0.9639	0.0	47.70
B7	1.0352	0.0	52.24
B8	1.1208	0.0	57.67
B9	1.2031	0.0	62.84
B10	1.2978	0.0	68.67
C1	0.8500	0.15	43.89
C2	0.8500	0.25	47.70
C3	0.8500	0.35	52.24
C4	0.8500	0.45	57.67
C5	0.8500	0.55	62.84
C6	0.8500	0.65	68.67

Table 1. Models of different degrees of stenosis

## 3. RESULTS AND DISCUSSION

A typical PHOENICS run for models in Groups A and B took between 80 to 90 minutes to converge. Models in Group C took an average of about 120 minutes for convergence. Convergence is considered reached when the relative errors for all the variables are within 1 percent. This is usually aided by the use of successive over-relaxation. In PHOENICS, the relaxation factor may be altered at any time during the numerical computation process and typical relaxation factors used in our simulations range between 0.5 to 0.85. Generally, for models in Groups A and B, about 500 sweeps are required to achieve convergence whereas Group C models may take up to 2900 sweeps.

Although pressure drops across the stenotic region and axial wall shear stresses

have been obtained in this study, they are not presented here due to space constraints. It suffices to state that the results obtained compare well with published results, and the reader is referred to the full paper found in Ang and Mazumdar [3]. However, it will be of interest to present results on the shearing stresses along the walls of the arteries in the circumferential direction due to secondary flow motion. A typical set of graphs (namely, for  $Re=700$ , at position  $s = 10.00, 15.24, 16.98$  and  $20.47$ ) for models A, B1 and C4, is presented here and the reader may refer to [3] for details.

Figure 2 shows that at the entrance of the curvature, ie. at  $s = 10.00$ , the shear stresses on both the inner and outer walls due to secondary flow motion, though still insignificant, are beginning to be detected. There is virtually no difference at this point between models A, B1 and C4, as would be expected. The secondary wall shear stresses on the inner wall (Figure 2(a)) and outer wall (Figure 2(b)) are of opposite signs in all the graphs, showing distinct secondary motion in the velocity field.

At  $s = 15.24$ , the narrowest portion of the artery for models B1 and C4, the shearing stresses on both the inner and outer walls for B1 and C4 become significantly higher than in model A as can be seen in Figure 3. The stenosis had begun to play an important role in creating significant secondary motion and causing the wall shear stress to rise up to five times that in an unstenosed bend.

From Figure 4, we observe even more significant rise in the secondary wall shear stress at  $s = 16.98$ , a position on the stenosed artery immediately after the stenosis. On the inner wall of model B1, we observe a ten-fold increase in the secondary wall shear stress. This could be due to the asymmetry of the stenosis that is

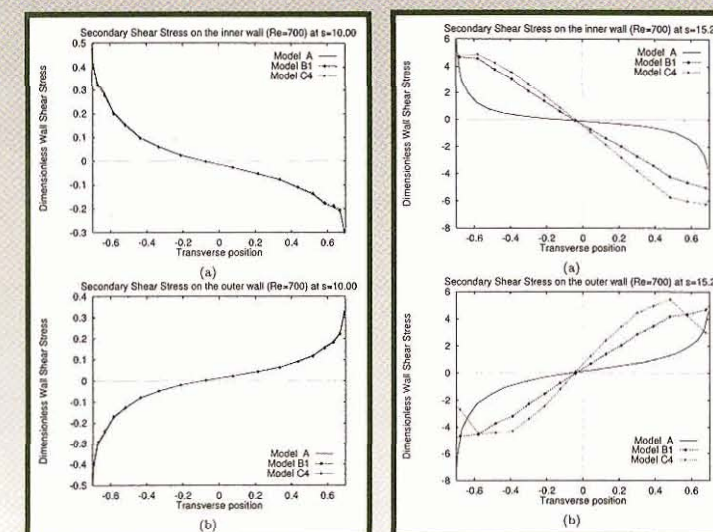


Figure 2. Graph showing dimensionless wall shear stress at  $Re = 700$  along the (a) inner wall and (b) outer wall, at  $s = 10.00$

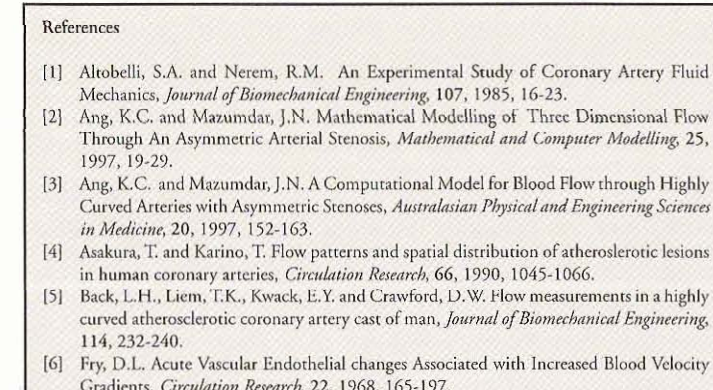


Figure 3. Graph showing dimensionless wall shear stress at  $Re = 700$  along the (a) inner wall and (b) outer wall, at  $s = 15.24$

present in B1. On the other hand, model C4 shows that the presence of a stenosis on the outer wall increases the secondary wall shear stress more significantly than on the inner wall despite the fact that the outer wall stenotic height is only about half that on the inner wall for model C4.

Figure 5 shows the situation at  $s = 20.47$ , at the exit of the curvature. We observe a drop in the secondary flow motion compared to the bend. The secondary wall shear stresses on both walls begin to diminish.

From these graphs, it is quite clear that secondary flow motion does occur as a result of the curvature. In addition, the presence of asymmetric stenoses at the curved portion elevates the circumferential wall stresses.

## 4. CONCLUSION

In this paper, we have developed a model simulating blood flow in a curved artery with different conditions of stenosis at the bend. In our discussion, we had focussed on the significant presence of wall shear stresses in the circumferential direction due to secondary flow motion.

It is believed that high shear stress on the arterial walls may cause endothelial damage [6]. Although this could not explain the genesis of atherosclerosis, the relatively higher shear stress on the stenotic side could be an important contributing factor to the progressive growth of the stenotic plaque. In this study, we have demonstrated that the significant presence of secondary wall shear stress in curved arteries, particularly in the region between the throat of the stenosis and the downstream end of the stenosis. Our models have also shown that the presence of the stenosis and the asymmetry of it may cause the secondary wall shear stresses to  $\pm$  vary significantly.

As stresses are difficult to measure experimentally, it is thus useful to be able to examine them in a mathematical model and in this study, we have developed models which will help us gain further insight into this important aspect of haemodynamics.

These results are particularly relevant to interventional cardiologists who perform angioplasty procedures for coronary lesions. Because curvature augments the increased resistance due to stenotic lesions, both curvature and stenosis should be considered when interpreting coronary angiograms. Multiple curves and multiple lesions are frequently encountered and mathematical modelling of more complex situations deserves further investigations.

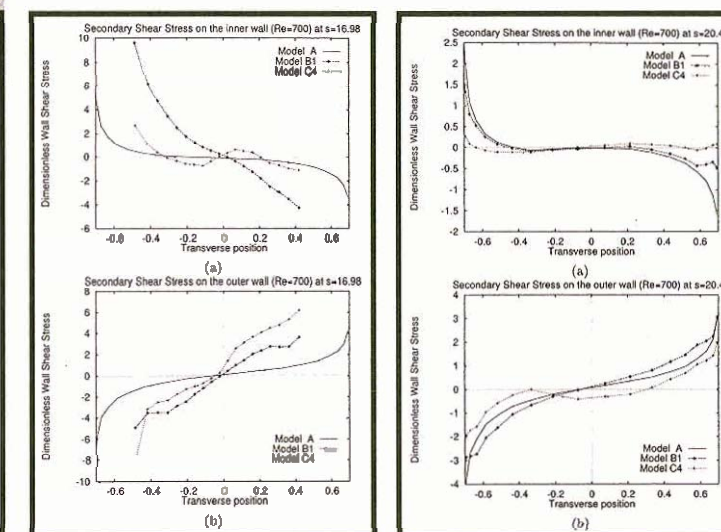


Figure 4. Graph showing dimensionless wall shear stress at  $Re = 700$  along the (a) inner wall and (b) outer wall, at  $s = 16.98$

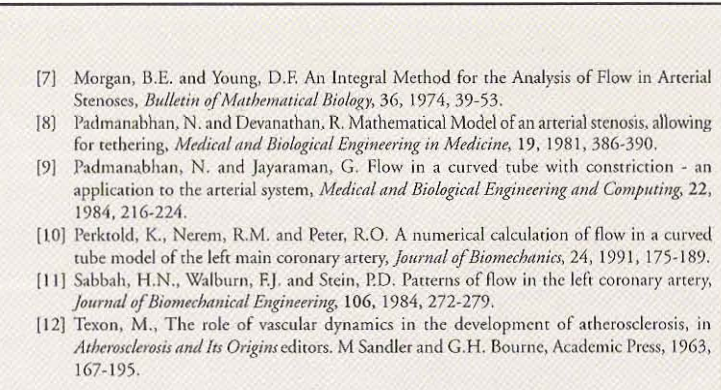


Figure 5. Graph showing dimensionless wall shear stress at  $Re = 700$  along the (a) inner wall and (b) outer wall, at  $s = 20.47$

# The first Singapore Conference on PRESCHOOL EDUCATION



"The Little People" from Pat's School House at the opening ceremony.

**T**he First Singapore Conference on Preschool Education, "Promoting Quality Care and Education for Pre-schoolers", was organised by the Division of Specialised Education, School of Education on 2 and 3 December 1998. The conference objectives set out by the Division of Specialised Education were: to review the status of present provision of quality standards for care and education of preschoolers in Singapore; to advocate and develop compatible change strategies for the future; to disseminate findings of research studies on young children in Singapore; to build international relationships for networking and information sharing.

Attended by 531 delegates, the conference was opened by Associate Professor Ho Peng Kee, Minister of State for Law & Home Affairs and Chairman of the PAP Community Foundation (PCF) Executive Committee, on 2 December 1998 at the Orchard Hotel. In his welcome address, Professor Leo Tan, Director, National Institute of Education and Patron of the Conference Organising Committee, highlighted a recent brain research by

Simmons and Sheehan (1997). The research pointed to the first three years of life as the period for the greatest opportunity for influencing the brain's development and the first five years as having the greatest impact in the development of every domain of human growth. Professor Tan urged teachers and parents of preschoolers to make good use of this important growth period to challenge and prepare our young children for the future. He also announced the launching of the new Diploma in Early Years Teaching programme by NIE in 1999. This new programme is specifically designed to train teachers of nursery and kindergarten children to be competent as decision-makers with the responsibility for independently planning and implementing programmes of relevant activities in preschool centres. He thanked the Ministry of Education (MOE) for appointing NIE to chair the Accreditation Committee for Preschool Teacher Training and for giving NIE the opportunity to work with MOE on the Curriculum Guidelines for Kindergarten Programmes.

Professor Ho Peng Kee in his opening address noted the changing face of preschool education over the years and how the Singapore Government in its effort to promote quality care and education for preschoolers have also kept it affordable. He was pleased to hear that NIE would be launching a new teacher training programme in 1999 and assured PCF's continual support as they work together to provide for the professional development of preschool teachers.



Artist Abigail Koh presenting her work to guest-of-honour Associate Professor Ho Peng Kee.

Three distinguished keynote speakers who represent the key players in the field of early childhood education from the USA and Australia were invited to share their expertise with the conference participants. Professor Lillian Katz, Professor of Early childhood Education, University of Illinois at Urbana-Champaign, spoke on Multiple Perspectives on the Quality of Early Childhood Programmes and examined five different perspectives from which the quality of early childhood programmes could be assessed.

Professor Thelma Harms, Director, Frank Porter Graham Development Center, University of North Carolina at Chapel Hill presented an overview of the Early Childhood Environment Rating Scale (ECERS) scale and how the ECERS has been used in research and programme improvement in the United States and many other countries. Professor Alan Hayes, Professor of Early Childhood Studies & Head of the Institute of Early Childhood, Macquarie University, address focused on the key role of early childhood services in building the "wealth" of nations, defined in personal, social, cultural and economic terms.

At the plenary sessions, lecturers and researchers from the Divisions of Specialised Education and Psychological Studies, NIE, explored the themes of "Promoting Thinking in the Preschool Classroom", "Quality Indicators in Preschool Education", "Connecting Minds in Preschoolers", "Preparing Preschoolers for Primary School", and "Young Children with Special Needs". Findings from their research studies and implications for teaching and learning were shared with the audience. Through the interactive poster sessions, the work of some Master degree students in the area of early childhood education were also showcased.

At the closing ceremony, Associate Professor S Gopinathan, Dean of the School of Education urged the delegates to think about the issues and findings of the research presented at the conference and to look into integrating these ideas into everyday care. Conference participants were encouraged to focus on the core issues of programme evaluation, teacher development and collaborative action research with the ultimate aim of moving towards better quality in provision of early childhood services.



Professor Alan Hayes (right) with Dr Marilyn Quah May Ling, Chairperson of the Organising Committee.



Professor Thelma Harms



Professor Lillian Kates



Participants getting lips from the poster display

# SEMINAR ON TEACHING AND LEARNING OF TAMIL LANGUAGE & LITERATURE AND THE LAUNCHING OF "A STUDY OF THE ERRORS MADE BY STUDENTS IN TAMIL LANGUAGE"

By Dr K Ramiah, School of Arts

On 26 September 1998, the Tamil Language and Culture Unit of the School of Arts (SOA) conducted a half-day seminar at the Lecture Theatre 1 of NIE with the theme "Questioning is the Heart of Teaching" for Tamil Language teachers on research in the teaching and learning of Tamil in Singapore. A research book entitled "The Study of the Errors Made by Students in Tamil Language" written by Dr K Ramiah was also launched during the seminar, which was sponsored by Mr M Ramachandran, proprietor of Jothei Store and Flowershop.

More than 400 Tamil teachers from primary and secondary schools and junior colleges as well as officials from the Ministry of Education attended the seminar which was graced by the presence of Mr S Iswaran, Member of Parliament for West Coast GRC.

In her welcome speech, Associate Professor Koh Tai Ann, Dean, School of Arts noted the fact that 80 percent of Tamil teachers in Singapore turned up at the seminar. This showed that they were keen to learn the latest methodology in language teaching and learning. The welcome address was followed by an address by Professor Leo Tan, Director, National Institute of Education. Mr S Iswaran, in his speech, which was delivered in English and Tamil, emphasized the importance of Mother Tongue in our schools.

The book launching ceremony followed right after the speeches. Then Dr K Ramiah, coordinator of Tamil Language and Culture Unit, delivered the keynote address "Questioning is the Heart of Teaching". He spoke about the importance of classroom questions and the various types of questions such as low, middle and high order. He also stressed the importance of higher order questions to develop thinking skills of the pupils.

The panel discussion on "The Role of Questions in Developing Thinking Effectively", chaired by Mr S Muthiah, Senior Curriculum Specialist/Tamil Language, MOE was fruitful and entertaining. The panel included Mr Tamilselvam, Nanyang Junior College, Mrs Gunavathy Nallathamby, Raffles Girls' Secondary School and Mr Shanmugam, Curriculum Specialist/Tamil Language, MOE.

The final session on IT was chaired by Mr N Govindasamy, Lecturer, NIE, who also gave a brief speech about the teaching of Tamil Language through computers. He noted that most Tamil teachers are literate in using Tamil software. Mrs Balasundaram Mahadevi, St Hilda's Primary School, also conducted a hands-on-session. The seminar ended in the afternoon with a vote of thanks. The evaluation conducted at the end of the seminar indicated that 99% of the participants found the seminar very thought provoking, informative and useful for their classroom teaching.

## SEMINAR ON THE TEACHING OF CHINESE

By Dr Goh Yeng Seng, School of Arts

The first seminar on "The Teaching of Chinese", organised by the Division of Chinese Language and Culture (CLC), School of Arts, was held on 5 September 1998 in NIE. Associate Professor Chew Cheng Hai, Head of CLC, officiated at the opening ceremony of the seminar.

Attended by some 170 participants consisting mainly of Chinese language specialists, secondary school and junior college Chinese language teachers from the Ministry of Education (MOE) and a few private school tutors, the theme of the seminar was "Reading Instruction: Research and Application."

The speakers included: Mr Neo Eng Guan on "Reading instruction in Chinese language and literature", Dr Goh Yeng Seng on "Content and formal schemata in Chinese language reading", A/P Chew Cheng Hai on Classical prose, Dr Zhang Aidong on "Classical poetry", Dr Cheng Ngai Lai on "Short-short story", Dr Ong Yong Peng on "Classical drama", Dr Soon Ai Ling on "Children's literature" and Mr Li Zhonghua on "Mythology". After the presentation of the papers, Dr Goh Yeng Seng chaired a forum to exchange ideas on various topics.

It ought to be mentioned that Dr Cheng Ngai Lai, who is from the University of Hong Kong and Dr Soon Ai Ling, from The Hong Kong Institute of Education were specially invited to the seminar to present their papers. The conference proceedings were later published in Chinese by SNP Publishing under the title, 'Reading Instruction: Research and Applications'.



Conference speakers and some participants of the conference

## ICMI STUDY CONFERENCE ON THE TEACHING AND LEARNING OF MATHEMATICS AT UNIVERSITY LEVEL

By Dr Lim-Teo Suat Khoh, School of Science

In the second week of December, about 80 foreigners carrying green conference bags were seen on campus. Listening carefully, one would have heard strange phrases like "Lebesgue integral", "Secondary/Tertiary Interface" or "APOS Theory" being uttered in English with American, French, Italian, Spanish or Australian accents. They were Mathematicians and Mathematics Educators from 25 countries and all 5 continents attending the ICMI Study Conference held at the NIE campus from 8 to 12 December 1998, organised by the Division of Mathematics in NIE, in conjunction with Association of Mathematics Educators and the Singapore Mathematical Society, it was the first ever ICMI Study Conference to be held in Asia as a study conference; attendance by invitation only.

ICMI, the International Commission on Mathematical Instruction, organises studies on various aspects of mathematical education on a regular basis. Each study begins with a discussion document and ends with a study conference, which results in the publication of a substantial study volume. The objectives of the study are to identify important issues, to study the problems, to facilitate the exchange of information on the work done internationally concerning the problems and, if possible, to provide directions. To date, ICMI has conducted 10 studies on various aspects of mathematical education.

The topic for the Singapore 1998 conference was "Teaching and Learning of Mathematics at University Level". There are many mathematics education conferences held around the world but most concentrate on mathematics education at primary and secondary levels. At the university level, Mathematics is often viewed as extremely abstract and difficult and, in nature and approach, very different from pre-university Mathematics. Moreover, Mathematics at the university is no longer taken by mathematicians-to-be or science undergraduates but as a service subject for Engineering, Economics and Business undergraduates. The large number of students taking Mathematics, the changes in curriculum, methods and approaches at lower levels and the impact of Information Technology on curriculum are some of the changes which profoundly affect the teaching of Mathematics at university level. It was thus timely that this study conference was held.

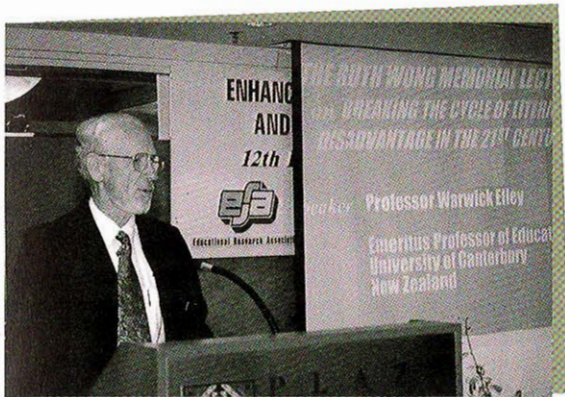
There were five plenary sessions, three panel sessions and 43 presented papers. 12 working groups in two streams were formed and each delegate participated in two working groups. Discussions were held over three one-and-a-half-hour sessions.

1998

# RUTH WONG

# MEMORIAL LECTURE

## - Breaking The Cycle Of Literacy Disadvantage In The 21st Century



Professor Warwick Elley, Emeritus Professor of Education, from the University of Canterbury, New Zealand, delivered this year's Ruth Wong Memorial Lecture held on 23 November 1998 at the Plaza Parkroyal Hotel, in conjunction with the ERA conference. The topic of his lecture was "Breaking the Cycle of Literacy Disadvantage in the 21st Century".

He began by outlining the world literacy scene as he sees it at the end of the second millennium. He drew upon two sets of figures, the adult literacy statistics reported annually for each country by UNESCO and the findings of the IEA international survey of reading literacy of 9 and 14 year olds, conducted in 32 countries, a survey which he had a large part in conducting. Lessons from this large study were drawn and what seems to make a difference between the reading programmes of different countries and what does not. These lessons have implications for reducing illiteracy in the Third World.

The world literacy scene at the turn of the century indicates a huge knowledge gap in some countries. UNESCO figures show that over 950 million adults cannot read or write. 95% of these adults live in developing countries, which is where most of the population growth will occur and nearly two-thirds of the illiterate are women, mothers and grandmothers of the next generation. The

cycle is thus doomed to continue. IEA surveys show a five-year literacy gap in Third World schools and that girls read more and better than boys in all countries. In Singapore, this difference is negligible.

Some of the variance between countries lies in societies' attitudes to reading and the strength of their literacy traditions. According to literacy historians, some countries, notably Finland, Sweden and France, have all had impressive levels of literacy for over a century with no shortage of libraries, bookshops, newspapers and well-educated adult models to support the reading habit in the next generation. However, there is little that developing countries can do in the short run to change their quite different state of affairs.

Several factors are often considered important to lessen this difference. Access to reading materials in public libraries, bookstores and schools is crucial. Time must be spent on silent reading or being read to. Good readers should also help to identify access to books. Students whose mother tongue is that of the school have a consistent advantage. Book-based programmes, through a rich supply of high-interest books have been found to provide the extra exposure to the language that the students require. The Fiji "book flood" was highlighted as a series of beneficial projects in book-deprived schools, which has led to large gains in English and other subjects.

Books do make a difference, but only if they are well-used. In Singapore, the importance of books in language learning was found in the REAP (Singapore Reading and English Acquisition Programme) project. The programme was started in 30 schools in 1985 and spread to all schools by 1989. The rich diet of high-interest reading and related activities produced consistent gains in English examinations and tests. Teachers and pupils also showed considerable enthusiasm for REAP. Today, Singapore students show literacy levels amongst the best of the OECD countries and were outstanding in the latest IEA surveys in mathematics and science.

In summary, Professor Warwick shared with the audience that if Singapore is to attain its goals in creating a thinking nation, these reading strategies that encourage students to follow their own interests, to think for themselves, and to create new visions, have much to offer.

# 5TH SOUTHEAST ASIAN GEOGRAPHY CONFERENCE: GEOGRAPHY AND GEOGRAPHIC EDUCATION IN THE 21ST CENTURY - DIRECTIONS AND CHALLENGES

The Southeast Asian Geography conference is a biennial event in a series of conferences that started in 1990 focusing mainly on research in geography and geographic education in the region. However, the last conference held from 30 November to 4 December 1998, organised by the Division of Geography, School of Arts, National Institute of Education, Nanyang Technological University and the Department of Geography, National University of Singapore in collaboration with the Southeast Asian Geography Association and the International Geographical Union's Commission on Geographical and Environmental Education encompassed a slightly broader theme.

The conference with the theme "Geography and Geographic Education in the 21st Century - Directions and Challenges" attracted some 160 participants from 20 countries. More than 80 papers were presented on three major themes - Economic and Developmental Issues, Resource and Environmental Issues, and Geography Education. Professor Leo Tan, Director, NIE officiated at the opening ceremony of the conference. The conference opened with two keynote addresses on geography education and the other on the current economic crisis and its effects on Southeast Asia by Professor Rod Gerber, Dean of Education, University of New England, Australia, and Dr Jonathan Rigg of Durham University, UK respectively. Concurrent sessions enabled papers on sub-themes to be presented during the four-day conference, which also afforded a good opportunity for geography teachers in Singapore to participate.

As has been the practice before, a one-day teachers' seminar on 'Creative Thinking and Creative Teaching in Geography' opened by Mrs Chan Jee Kun, Director, Curriculum Planning and Development Division, Ministry of Education, was also held in conjunction with the conference on 2 December 1998. Well-known overseas professors presented five papers and topics include "Rivers: Creative Teaching for a Better Environment", "Coastal Processes, Landforms and Change: Some Malaysian Examples for Teaching Geography" and "Different Types of Teaching Software for Geography Lessons: A German Experience of One Decade". More than 200 geography teachers as well as conference participants were in attendance.

Feedback from participants of both events has been most positive in terms of their satisfaction with the organisation, quality of papers presented and opportunities for interaction among participants during the five-day period. It was resolved at the end of the conference that the 6th Southeast Asian Geography Conference would be held in Hochiminh City, Vietnam in December 2000.

Associate Professor Goh Kim Chuan

## I. INTRODUCTION

In the last few years, data-mining has been widely quoted as a value-added tool for data analysis and business intelligence for industrial applications. Slowly, it is beginning to creep into use in the educational sector. Specialists in this area, however, are aware that data-mining has been around for many years, but using different terms, such as information processing, statistical and data analysis. Data-mining has been in use in the education sector in one way or another since time immemorial. It is used in projects, the way history is conveyed to students, using mathematical formulae and statistics for problem solving, churning out the numbers for schools' ranking and the value-added list etc. So, why is there still so much infatuation with the use of the term data-mining?

Unfortunately, due to the constant coining of new terms to capture the flavour of the month and for use as marketing gimmicks, the real essence of the term 'data-mining' may, have gotten lost in the torrent of media hype and "rah-rah". The purpose of this article is to make clearer to the generalists and laymen what data-mining involves and how it has been and is being applied in education.

## II. DATA-MINING - QUALITATIVE AND QUANTITATIVE

To begin with, data-mining processes can be loosely classified into two categories: qualitative and quantitative. Qualitative data-mining looks at text-based non-numerical data, captions, visuals and media. It need not involve technical or mathematical processes to yield the desired information. Several examples from education will be presented below to illustrate this process. On the other hand, quantitative data-mining focuses on numerical data and involves the use of mathematical and statistical tools to identify relationships or recognize patterns. Examples based on quantitative data-mining will also be presented to contrast with those based on qualitative data-mining.

### II.1 QUALITATIVE DATA-MINING

In this age of computers and statistics, it is easy to forget that our insights only come when we stand back and reflect. In an IT environment, a mere mass of data, no matter how it is gathered, is in itself meaningless until an organising intelligence works upon it to discern its patterns and trace its implications (data-mining). Every science has its associated art; in medical diagnostics, a good practitioner recognises disease where his patients and students see nothing but incoherent symptoms. The same is true of history. "When we seek the date of battles or the duration of empires, we begin with primary sources in documents and inscriptions and set about interpreting them. But if we wish to understand that yet more subtle and important thing, the history of the human spirit, we have to attempt the much harder task of feeling our way into the minds of the dead by interpreting their literature, art and architecture. This sensitive and delicate task is cultural history" (A.C. Grayling, "Self-Portrait of Ancient Greece", in the Financial Times, August 1st 1998, Weekend Edition) [2]. The delicate task in cultural history and the interpretation of historical records is a form of qualitative data-mining.

Students are encouraged to source for information from the mass media, library and/or interviews for their school projects. Without realising it, teachers are imbuing the students with qualitative data-mining or information processing skills (a term used by educationists). Hence, all non Internet-mediated searches come under this category of qualitative data-mining. Other examples include the use of

pictures and charts to visualize information and elicit responses or interpretations from the students.

### II.2 QUANTITATIVE DATA-MINING

In contrast, whenever one uses a search engine (e.g. Yahoo, Excite, etc) on the Internet to look for information, the artificial intelligence (AI) programme embedded in the search engine performs a pattern recognition process to match letters of the alphabet or strings of characters. Because of the use of mathematical techniques like AI or statistics in the search process, the information-gathering comes under the purview of quantitative data-mining. Other forms of quantitative data-mining in the classroom include the manipulation and interpretation of data from laboratory work or field studies/trips to form conclusions and deductions, and the use of computers (e.g. spreadsheets) to perform scenario modelling and simulation, as in virtual experiments.

The type of dataset involved in school ranking and the compilation of examination scores are almost exclusively numerical. These datasets lend themselves readily to manipulation by quantitative techniques, say in calculating the mean, mode and standard deviation. For instance, the current school ranking system can be further improved with quantitative data-mining to yield more information about the schools. The current ranking system does not identify a trend or quirks in the performance of schools due to the lack of data since ranking was only introduced in the early 90s. Statistically, a dataset of more than 10 years should be available before a more in-depth analysis can be made to unearth the trends or randomness in the performance.

By the year 2010, with over 15 years of school ranking, we should be able to confidently analyse the standard deviation (volatility) of the changes in the T-Score (note: we are not calculating the standard deviation of the T-scores directly but their changes). At the same time, their expected returns (value-addedness) can be culled from the direct T-scores. But if the volatility of a high T-score is also high, it may suggest that the performance is not trend-based and this year's performance is no guarantee for future performance. On the other hand, if the high T-score is accompanied by a low volatility in its changes through the years, it suggests the emergence of a trend and reflects the more stable value-added capabilities of the school concerned. Hence, it is important to store and re-analyse the school ranking data a few years down the road when the statistical significance becomes important with a larger dataset. This illustrates another potential application of quantitative data-mining.

## III. CONCLUSION

This article is meant to convey to the reader the essence of data-mining and how the term has been coined and used to describe information processing skills (IT and non-IT based) which have traditionally been used or are currently being used, especially in education. A knowledge and appreciation of the foundations of data-mining is crucial, especially for educational applications in order to ensure that educationists do not jump into the fray without being aware that they had been doing data-mining all the time. The improvement that data-mining can bring, though, is in the quantitative sense, with the emergence of more sophisticated non-linear scientific techniques like AI and the like for data analysis and manipulation.

## IT CONSULTANT - DR FREDERICK LOCKWOOD

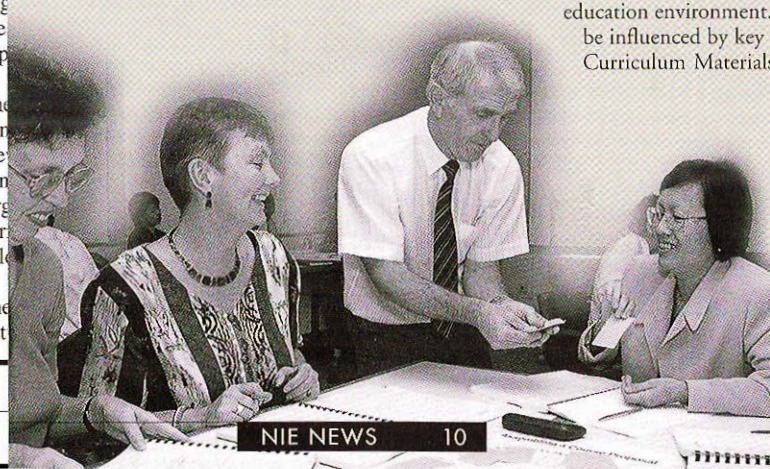
Under the IT Masterplan, Dr Frederick Lockwood, was invited to NIE as an IT consultant, from 21 to 23 October 1998 to give a series of lectures and workshops on the development of curriculum materials for open, flexible and distributed learning to academic staff. Dr Lockwood is a senior lecturer with the Institute of Educational Technology (IET) at the Open University, UK and Head of the Professional Development in Educational Technology programme.

The first lecture "Development of Curriculum Materials: International scene and current trends" gave insights into the dramatic changes that will impact on the higher education environment. It was also predicted that future developments in teaching and learning are likely to be influenced by key concepts associated with student learning. In his second lecture entitled "Improving Curriculum Materials for Distributed and Active Learning" Dr Lockwood argued that evaluation is the

process by which quality of content, teaching effectiveness and administrative efficiency of a learning system are assessed and the basis from which curriculum materials are improved. Quality assurance is viewed as the combined procedures or systems that ensures an effective, efficient and satisfying experience. Both of these qualities need to be planned for from the start.

Besides the two lectures, Dr Lookwood also conducted two workshops, one on Science and Mathematics and the second, on Arts and the Humanities. The workshop focused on the development of self-instructional materials and involved a combination of presentations, seminars and games. Key parameters such as workload, student activities, the role of media and multimedia were also addressed.

◀ Dr Lockwood (centre, standing) sharing his expertise with staff during the workshop.





## Welcome

The Institute extends a very warm welcome to the following new staff members:

### SCHOOL OF ARTS

Mr Pual Grahame Doyle, *Lecturer*

Ms Bernadette Bayley Smith, *Teaching Fellow*

Mr Colin George Reaney, *Teaching Fellow*

Ms Fatmakhano Pirbhai-Illich, *Teaching Fellow*

Miss Andrea Valerie Sweetman, *Teaching Fellow*

Mr Chang Chew Hung, *Teaching Associate*

Miss Ang Hwee San, *Laboratory Technician*

### SCHOOL OF EDUCATION

Dr Jaganathan Muraleenathan, *Associate Professor*

Dr Dennis John Rose, *Assistant Professor*

Dr Luo Guanzhong, *Assistant Professor*

Dr Hong Ee-Li, *Lecturer*

Dr Lourdasamy Atputhasamy, *Senior Fellow*

Mdm Afida Bte Jappar, *Corporate Support Officer*

### SCHOOL OF PHYSICAL EDUCATION

Mr Tan Eng Sian, Vincent, *Laboratory Technician*

Mdm Ong Lee Choo, *Laboratory Technician*

### SCHOOL OF SCIENCE

Mr Yeap Ban Har, *Lecturer*

Mr M Jegatheesan, *Laboratory Technician*

### COMPUTER SERVICES CENTRE

Miss Tng Lay Hong, *Analyst Programmer*

Miss Ong Lay Har, *Laboratory Technician*

### DEVELOPMENT & ESTATE DIVISION

Miss Sng Su Ling, Imelda, *Management Support Officer*

### FINANCE DIVISION

Miss Chan Bee Ai, *Corporate Support Officer*

### NIE LIBRARY

Mr Lim Peng Han, *Assistant Librarian*

Mdm Ida Ruyani Bte Snin, *Corporate Support Officer*

Miss Lim Lay Guat, *Corporate Support Officer*

### PERSONNEL & GENERAL AFFAIRS DIVISION

Mrs Chua-Fang Siaw Mey, *Administrative Officer*

## Promotions

We would like to congratulate the following staff on their recent promotion wef 1 January 1999:

### To Principal Estate Officer

Mr Selvarajan Selvaratnam, DED

### To Senior Assistant Director

Mr Wong Wing Chow, PGA

### To Senior Assistant Librarian

Mrs Lee Mui Sin, NIE Library

### To Assistant Librarian I

Mrs Loo Wah Enn, NIE Library

### To Laboratory Technician Grade B

Miss Cecelia M N Selvam, SSc

### To Laboratory Technician Grade C

Ms Saniati Bte Suib, CSC

Mdm Khor Lay Choo, CSC

Mr Tay Tien Hee, CSC

Mr Keng Poh Kok, CSC

Mrs Loan-Ng Bee Lan, MRC

Mr Ngoh Kiew Meng, Henry, MRC

### To Secretary Grade II

Ms Tan Bin Eng, Cecilia, SOE

### To Secretary Grade IIIA

Ms Yow Gea Nuan, SPE

Miss Tan Kheng Yoke, Charlotte, NIE Library

### To CSO Grade III

Mdm Tan Bueh Hua, STA

Ms Kamsina Alfia Bte Jumari, PGA

Mdm Raminah Bte Silap, SOE

Miss Ida Amelia De Almeida, SSc

### To CSO Grade IV

Mdm Lee Hwee Ann, SOE

### To Attendant (Special Grade)

Mr Sudarman Bin Abuyamin, PGA

## Appointment/ Re-Appointment

Associate Professor Chin Woon Ping has been appointed as Head, Division of Literature and Drama, School of Arts for a period of 2 years from 1 December 1998.

Dr Lutz Presser from the Division of Visual and Performing Arts, School of Arts has been appointed as the Art Coordinator with effect from 14 December 1998.

## Congratulations

To A/P Esther Tan, Head, Division of Psychological Studies, School of Education on her appointment as a Justice of Peace by the President, Republic of Singapore, for a term of 5 years with effect from 1 October 1998.

To the WIT team, "Bugbusters" from the Computer Services Centre on winning the Silver Award at the 1998 Public Sector WITs Convention held on 20 November 1998.

## V I S I T O R S

We are pleased to have received the following visitors for the month of October 1998 to December 1998:

- 27 October 1998 : Officials from the Ministry of Health and Education, Bhutan.
- 30 October 1998 : Dr Ali Abdul Aziz Al Sharhan, Minister for Education and Youth, United Arab Emirates.
- 10 November 1998 : Principal and senior teacher from Hebei Normal University's Affiliated Secondary School.
- 28 December 1998 : Vietnamese teachers from Le Hong Phong High School for gifted students.

# NEW MASTER PROGRAMMES

Three new master programmes will be offered from January 1999. They are the Master of Arts (Instructional Design & Technology), Master of Education (Mathematics Education) and Master of Science (Exercise & Sport Studies). Brief outlines of the three programmes are given below:

## Master of Arts (Instructional Design & Technology)

Designed for educational and training professionals working in schools, universities, polytechnics, business and industries, the programme is concerned with the application, development and management of information technologies in the school environment and corporate learning environment. Participants will be able to learn and practise, in real life, how to solve problems using the most up-to-date IT-related technologies as well as training and management techniques to improve their job performance.

## Master of Education (Mathematics Education)

This programme is for teachers who are working as mathematics educators and wish to obtain higher qualifications in their area of expertise and interest. It aims to develop knowledge through a substantial core of studies in mathematics and mathematics education.

## Master of Science (Exercise & Sport Studies)

Designed for participants in the health and wellness industry and professionals with a background in physical education, sport and fitness, this programme encompasses subjects which will enable candidates to work with faculty in areas of particular interest to them and to complement these areas with related subjects from the school of Physical Education and across the University.

# NIE-ESSO ARTS HOUR

- A Lecture Recital by Evan Drachman and Richard Dowling

The ESSO Arts Hour Concert Series has for some time facilitated the organisation of many arts activities involving renowned artistes of both local and international stature. This year, the continuation of the generous sponsorship of ESSO to the Arts Hour Programme came in the form of a concert on 14 October 98, by not one but two world renowned musicians; cellist Evan Drachman, grandson of the Russian cellist Gregor Piatigorsky; and pianist, Richard Dowling. That this event would attract a crowd was an understatement; there were not enough seats and many were left standing.

Professor Leo Tan, Director, NIE received the cheque from Mr Lee Kheow Ann the technical manager of ESSO Singapore and the concert then began with the intimidating *Elegie* by Gabriel Faure, renowned for its treacherous enharmonic twists and turns and its demands on subtle inflections of expressive nuances. Having left the audience agape with their handling of the Faure with consummate ease, the duo went on to introduce a delightful set of Variations on "A Frog He went A Courting" by Paul Hindemith and the duo described their interpretation of the narrative processes in the work. Certain sound gestures seemed to correspond quite remarkably with the narrative and description of animal movements in the Variations.

Richard Dowling commemorated the centennial celebration of the American composer George Gershwin by playing the Preludes for solo piano. One could have sworn that Music Studio 2 was suddenly a smoke filled jazz club with a trombone or trumpet. It was ample demonstration of a pianist capable of conjuring magical sounds from the piano. More illusions were spun with *The Swan* from "Carnival of the Animals" by Camille Saint-Saens followed by a transcription, by Drachman's grandfather Gregor Piatigorsky, of *Masques* from "Romeo and Juliette" by Serge Prokofiev.

For an encore, the duo played the first movement from the sonata for cello and piano in G minor, Op.19 by Sergei Rachmaninov. The concert celebrated a number of things; the centennial of Gershwin's birthdate, the beautiful tone production of a 288 year old cello, not to mention the cellist's incomparable performance, a grandfather's continued influence on a future generation but most of all, ESO Singapore's continued support of the NIE Arts Hour series.



Evan Drachman (left) and Richard Dowling at their best.

## THE PGDE

- JANUARY 1999 INTAKE



With their fruit of labour, the Raffles Annex 2, staff from the Development & Estate Division, NIE, from left, Andrew Tan, Lim Tow Seng and Low Ngee Ang

About 600 students have been admitted to the January 1999 intake of the Postgraduate Diploma in Education (PGDE) programme. This intake was organised in view of the increase in the recruitment of teachers and is over and above the usual intake in July of each year. A five-day Teacher Preparatory Programme was run from 4 to 8 January 1999 for these trainee teachers who have since been posted to schools for seven weeks of school experience. During this seven-week period, the trainee teachers will attend some courses part-time in NIE. Full-time studies in NIE will commence in March after their attachment to schools. The January intake of trainee teachers is expected to complete their course by the end of this year.

To cope with the increase in the number of trainees in NIE, a second temporary classroom structure called Raffles Annex 2 was constructed in a record time of eight weeks. Located beside the new Botanic Garden Visitors' Centre, the fully air-conditioned two-storey building has 12 furnished classrooms. Each room is able to accommodate up to 40 students.

### Editorial Committee

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