English as a Medium of Instruction in the Public Higher Education Institution: A Case Study of Language-in-Education Policy in Malaysia

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Abstract: - During the British colonial period in Malaysia, a vernacular school system along with the English school was introduced in Malaysia. However, English-educated students had better employment and opportunities in the university. During the first 10 years after Malaysia's independence from Britain, English and Malay language were the medium of instruction especially in the education sector. From 1970 onwards, English language was gradually phased out in the education sector. Paradoxically in 1993, the Prime Minister announced the reimplementation of English as a medium of instruction for science and technology courses in public higher education institutions (PHEIs) in Malaysia. The focus of this study is on the knowledge shared, utilized and created by policy makers for building, developing strategy and policy of English as a medium of instruction for science and technology courses in PHEIs.This research is based on a literature review and a case study of the language-in-education policy in Malaysia. The findings showed that language-in-education policy is strongly influenced by the highly centralized and bureaucratic top-down system, globalization and colonialism. Malay language is the national language, whereas in practice, English language still continues to be a medium of instruction in Higher Education institutions in Malaysia.

Key-Words: - language-in-education policy, knowledge sharing, knowledge utilization, knowledge creation, policy-making process

1 Introduction

Malaysia was one of the British ex-colonial countries that gained independence, first in 1957 as Federation of Malaya, and then in 1963 when it formed a new union with Sabah, Sarawak and Singapore (Singapore opted out later in 1965 to become an independent country). Malaysia retained English as an official language for the first ten years after independence, along with the Malay language (the national and official language). From 1970 onwards English became the second language. However, English is widely used in the business sector until the present, and University of Malaya (UM) which was set up during the colonial period, still continues teaching technology courses in English for some of the science courses.

In response to globalization, Malaysia's leaders embraced globalization as a force that would allow Malaysia to be integrated into the rest of world and boost its national economy [59]. Malaysia is a multi-racial, multi-ethnic and multi-religious society. Any approach to prepare Malaysia for globalization must be geared towards nation-building for national identity and national unity as well as economic equality within the multi-racial society. In 1992 'Wawasan 2020' was launched to state Malaysia's intention to become a developed country by the year 2020. 'Wawasan 2020' laid out nine challenges. The sixth challenge of the nine challenges emphasizes:

…establishing a scientific and progressive society, a society that is innovative and forward-looking, one that is not only a consumer of technology but also a contributor to the scientific and technological civilization of the future.

As a result, beginning in 1993, the Prime Minister of Malaysia Mahathir Mohamad (1981-2003) publicly announced the implementation of English as a medium of instruction for science and technology courses in PHEIs.

1.1 Knowledge and the policy-making process in developing countries

In developing countries, the knowledge link to the policy process is widely studied in the development domain

[24][9][47][48]. The main focus is on the importance of research in policy-making.

Hezri[21] did a study on the sustainability indicator system and policy process in Malaysia. He elaborated that there are constraints in the policy-making process in Malaysia, consisting of meta-policy issues, technical issues, communication issues and theoretical constraints.

He put forward a framework of knowledge utilization and learning as an option to overcome implementation constraints. Policy-making activity often occurs during crisis; either domestic or external crisis. Nevertheless, during both stable and crisis situations, the policy-making for innovation or change is greatly influenced by the interests and convictions of political entrepreneurs who hold positions in the policy-making system[22].

The top-down approach that is still practiced by many developing countries reflects the interests of the authorities in public policy. In addition, international relations in terms of aid, and political, economic and social influences, would also be reflected in the public policies of the developing countries.

Ashford, Smith, Roger-Mark, Fikree and Yinger [4] explain that the policy process is complicated, and policy makers draw information from various resources. In addition, different policy makers are influenced by their beliefs and values, and by various prominent individuals with competing ideologies and long-standing practices. Because the policy environment in developing countries, for example, in Malaysia is highly centralized, a new idea must go through a complicated process of exchange and selection before it penetrates through the policy environment, gets accepted by policy makers, and becomes part of an institutional agenda.

1.2 Language policy

One of the study areas in language policy is language-in-education policy. Tollefson [57] wrote that language policies in education are shaped and influenced by many factors, for instance social forces: political conflicts, changes in government, migration, changes in the structure of local economies, globalization and elite competition.

Although most educational policies continue to be national or local decisions, language policy-making is also internationalized, especially at the end of the colonial period and the beginning of globalization. Globalization has brought about an unprecedented spread of English, and the spread of English has posed a serious challenge to non-English-speaking countries [59]. The challenges are related to sociopolitical, economic and cultural impacts for non-English-speaking countries, most of which are developing countries. And the foreign presence was both accommodated and resisted in ways that shaped the non-English-speaking

countries' language policies.The steps in the policy are to increase and improve language education as part of broad economic development, and English promotion policies have begun to dominate educational language policies in many countries in the world [57].

Kaplan [29] added that language does not have a will of its own to become dominant, it is the English speakers (ranging from journal editors, reviewers and other gatekeepers in science and technology, and including English-speaking scientists) who underlie the spread of English. And most importantly, people who govern a country also can instigate the spread of English through policy.

In Malaysia, though Malay language is for nation building, the re-adoption of English as the medium of instruction for science and technology courses in PHEIs in 1993, and in 2003, for teaching science and mathematics at primary and secondary educational levels, has been decided. This reflects decision-making in the Malaysian education system is a highly centralized and bureaucratic top-down system [27]. In addition, the Education Act of 1995 gives the Minister of Education greater powers than before in many educational matters [64].

Since this is the case, the present study investigates the knowledge shared, utilized and created by policy makers in building and developing strategy and policy of English as a medium of instruction for science and technology courses in PHEIs.

2 Objectives

This case study investigates language-in-education policy in Malaysia. The focus of the study is on the process of building and developing strategy and policy of English as a medium of instruction for science and technology in PHEIs in Malaysia since 1993. Therefore the objectives of the research are:

- To understand the process of building and developing strategy and policy of English as a medium of instruction for science and technology courses at PHEIs in Malaysia
- To identify the problems in using English as a medium of instruction for science and technology course at PHEIs in Malaysia

2.1 Methodology

The research strategy followed in this study is a case study of language-in-education policy in Malaysia focusing on English as a medium of instruction for science and technology courses PHEIs in Malaysia. This paper will present the initial stage of this research. Therefore, literature review and secondary data (1993

onwards) have been collected to analyze the policy-making process in Malaysia and the case study.

3 The current policy-making process in Malaysia [1]

Policy-making process in Malaysia begins with agenda-setting and policy formulation simultaneously. A new policy is initiated by the appropriate minister. A Cabinet paper containing the rationale and need for a policy will be compiled by the ministry. This paper is circulated to the ministries and departments for comments. The feedback would be incorporated into the Cabinet paper prepared by the relevant ministry, which is sent to the Cabinet Division (a division of the Prime Minister's Department, which functions as a secretariat to the Cabinet).

The Cabinet Division would prepare copies for circulation at the Cabinet meeting (consisting of all the ministers for the federal government with the authority to consider and endorse government policies). Policy presentation and exchange of information between the government and the public is the responsibility of the Department of Information. The Department of Information also acquires feedback from the public and persuade the public to accept and participate in the government policies. The communication is in the form of seminars, documentaries, dialogue sessions, lectures and film shows. Mass communication is used for a more widespread communication with the public. The mass media serves as a means of publicity, announcement, awareness and providing information.

The Malaysian Civil Service Link (MCSL) provides a single main gateway linking to all government websites, and providing access to government information and various government policies.The Implementation and Coordination Unit (ICU) of the Prime Minister's department monitors the implementation of program components. Policy evaluation is undertaken by the Macro and Evaluation Division of the Economic Planning Unit (EPU) of the Prime Minister's Department. This unit evaluates the impact of government policies on the quality of life and the country as the whole.

From the agenda-setting, follow with policy formulation, policy implementation and policy evaluation, policy-making takes place at the Federal government level (Figure 1 only.

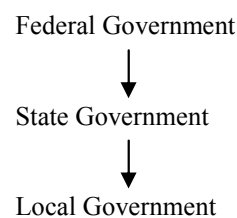Federal Government

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State Government

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Local Government

Figure 1: The government system in Malaysia

Malaysia policy-making is a combination of liberal and procedural types. The concentration of power is at the higher level of government. National issues for example education and defense issues are of Federal jurisdiction. This creates problems in the public policy-making process.The Federal government makes policy to bring about social change for the whole country, for example, language policy and economic policy. The Federal government also set guidelines on how something to be done and who is responsible to take action.

4 Case Study: Language-in-Education Policy in Malaysia

3.1 Colonial period

Since Malaysia was a British colony, English language was already associated with power and prestige [6]. The English schools were located in the urban areas where the English, the non-Malays (mostly Chinese businessmen and a few Indians) and Malay elite enrolled their children in the schools. The schools also gave opportunities for further education, employment in the government and access to scholarships. As for the vernacular school system (Malays, Chinese and Tamil schools respectively), they were located at the rural areas except some Chinese school located in the rural areas (some Chinese engaged in business sector).

On the eve of Malaysia's independence, the British formed the Barnes committee. The Barnes Report recommended a national school system instead of vernacular school system, for 6 years at the primary education level in two languages i.e. Malay and English language. This system would ensure English language would continue to be one of the official languages and over a period of time, the need to have separate schools in Chinese and Tamil would slowly disappear. The community agreed with Malay being treated as the principal language, but they felt that there should be some provisions to acknowledge Chinese and Tamil as important components of a new definition of Malaysia's national identity. The national school system failed and the vernacular school system continues even after independence.

3.2 Early Independence

The direction of language policy was toward the national sentiment, since the new independent government was predominantly ruled by Malay leaders, even though the ruling party was an alliance of 3 major parties. The Alliance consisted of UMNO (United Malays National Organization), MCA (Malaysian Chinese Association) and MIC (Malaysian Indian Congress).

To Malay leaders, Malay language was the best choice, because Malays are the majority in Malaysia and also because of its role as a lingua franca, its position as the main interethnic communication tool before and after independence, its possession of high literature, and its previous use as a language of diplomacy and administration in the Malay archipelago [37][41]. This belief was explicitly incorporated in the Federal Constitution. Malay language as the national and official language, and Malays' rights were secured since independence in 1957. To ensure that the Malay language was widely accepted, it was mandated for a wide range of activities, including media, government and most importantly, education.

However, English was allowed to share official language status with Malay for a period of ten years (1957-1967). This was a period to be used to develop Malay language materials containing explicit knowledge in the form of textbooks, terminologies and translations [60]. The transition from English to Malay was slow in the education system, which allowed the continuation of the English system of education along with the Malay system of education and the vernacular system of education.

The English-educated Malaysians continued to find employment in the public and private sectors. The Chinese-educated Malaysians were involved in the business sector. The Malay-educated students either worked as teachers or continued their ancestors' work(fishermen and farmers). The Indian-educated students worked in the rubber plantations. The outcome of this situation led to wide income disparity among the three ethnic groups, and between urban and rural areas. Despite all the evidence, the government only seriously began implementing the transition from English to Malay in the education system in 1970, only after 1969 election.

In 1969, a declaration of a state of national emergency led to a suspension of parliament, and the National Operation Council governed the country from 1969 to 1971. The outcome after 1969 was a transition from English to Malay at all levels of the education system. The transition only affected all English schools and some Chinese and Indian schools. There are still Chinese and Tamil vernacular schools until present.

3.3 Public higher education institutions 1960s-1980s

University of Malaya (UM), which was set up during the colonial period, still continues teaching all courses in English (except those in Malay, Chinese and Indian studies) since independence in 1957. In 1965 UM and the Ministry of Education formed an examination board for admission examinations to be conducted in Malay. In 1965, the first entering class of Malay-speaking students was admitted into UM. The transition was gradual, and science courses were still in English. The Faculty of Arts and the Faculty of Economics and Administration conducted their courses in both languages.

There was a need to set up more public universities in order for Malay to replace English as the medium of instruction at higher education institutions by 1983. In 1970, National University of Malaysia was formed, followed by the University of Technology Malaysia, University of Agriculture Malaysia and the Science University of Malaysia.Three new universities used Malay as the medium of instruction, while UM and Science University of Malaysia largely used English. The reason the two universities continued to use English as a medium of instruction was stated in Malaysia's second five-year plan (1970-1975) "….This acceptance of a foreign language, particularly the English language, was meant to promote the development of the nation via science and technology" [37].

3.4 The reemergence of English as a language for science and technology in Malaysia

The implementation process of conversion from English to Malay had reached the state that from 1988 onwards, for university entrance, a credit in English was not required, and in 1995 English was removed from the list of compulsory subjects to obtain the *Secondary School Leaving Certificate*. English syllabus gradually focused more on communicative skill. As Malay continues to have strength in national education, these changes led to the decline in mastery of the English language by Malaysians.

This scenario became a barrier for graduates from public higher education institutions to seek jobs in the workforce, where the public sector is shrinking and the private sector is expanding due to the privatization policy. Beyond the borders of the national education sector, English language is still widely used. This created a new problem. The government needed to create an effective language-in-education policy to overcome the increasing unemployment of graduates from the public universities.

This problem was taken seriously when Malaysian industries were suffering from the world economic crisis in the end of the 1980s and early 1990s. In 1993, the

Prime Minister (Mahathir Mohamad) announced the teaching of science in English in universities and colleges [23]. National University of Malaysia 2004/2005 academic session began using English for all science and technology courses [15]. Malaysia University English Test (MUET) was a requirement to enroll in higher education institutions.

The private higher education institutions however, preferred IELTS or TOEFL for transnational programs. In 1995 a guideline was issued by the Ministry of Education, allowing the use of English in tutorials, seminars, assignments, foreign language classes and other similar activities. This resurgence is a means to advance in scientific and technological matters, and to assist Malaysia in its quest of becoming part of a global community, in order to achieve Malaysian Vision 2020 (an idea by the then Prime Minister) which envisions Malaysia as an industrialized nation [23].

However in 1997, the Asian economic crisis hit Malaysia. Instead of continuing to create a better implementation of teaching science and technology in English for public higher education institutions, the government created a new policy to assist those who could not afford to study abroad [64]. The new policy was to set up private higher education institutions. The government realized that private education flourished through freedom to select the medium of instruction. The private educational sector was largely driven by funding from corporations and wealthy individuals.

To legitimize the freedom, the Education Act 1996 and the 1996 Private Higher Education Institution Act were introduced. The former approved the use of English as medium of instruction for technical areas and postsecondary courses, and the latter allowed the use of English in dual programs with overseas institutions and offshore campus situations.

The Education Act 1996 also included the point that Malay would be a compulsory subject in private education institutions, if the medium of instruction was other than the national language. The liberalization of higher education policies led to two streams of higher education: public universities with medium of instruction in Malay (except science and technology courses), and private universities with English as medium of instruction. The private universities are expensive, so enrollment is mostly middle class and Chinese. The public universities are subsidized by the government, so the enrollment is mostly working class group and Malays. This has divided the country along socioeconomic lines and ethnic lines.

The public university graduates are disadvantaged seeking employment in the private sector because of lack of competence in English. In 2002 there were about the 44000 university graduates unemployed [12][6]. Instead of referring back to the 1993 policy for teaching science and technology in English for higher education institutions, the government announced the implementation of teaching science and mathematics in English at the primary and secondary levels of education in 2003. And in 2004, the Ministry of Higher Education was formed to manage the higher education institutions.

5 Discussion

The cabinet, in 1993, endorsed teaching science and technology in English in higher education institutions. There was no systematic planning, only an announcement from the Prime Minister (Mahathir Mohamad).The initial policy was to address the problem of unemployed graduates who are unable to seek employment mainly because of their main inability to speak English. Presently, the matter has not been resolved. Federation of Malaysian Manufacturers did a survey that confirmed that the inability to speak English is one of the main reasons for graduates' unsuccessful attempt to seek employment [32].

This problem can be attributed to the fact that the higher education institutions were not involved in the decision making. They, however, were accountable to implement the policy. As a result, the universities only adapted to the previous approach, converting from Malay to English for science and technology courses. They did create their own strategies, University Utara Malaysia for example, emphasizing on strengthening English language among undergraduate students during semester break. The New Strait Times (An English national newspaper) has been promoting the use of Newspapers in all levels of education sectors since 1985. This initiative from the implementers and relevant organization are not acknowledge by the policy makers.

After the 1993 announcement, the government only dealt with the legality of the policy, the 1995 guidelines and the 1996 education act for public and private higher education institution. In 1997 the Asian economic crisis prevented Malaysians from studying abroad, which has caused the government to focus on the development of the private higher education institutions

In 1998 the government focus their attention to liberalization of the higher education institutions, resulting in more private involvement and corporatization of public higher education institutions. The policy-making process, applying top-down approach from the Federal government level, has made policies that do not address the real problems and interests of Malaysians as a whole.

The policy makers do not represent all of society best interest. The meta-policy (policy on how to make policy) itself is the problem in the policy process in Malaysia. In 1993, teaching science and technology in English for higher education institution only changed the

medium of instruction from Malay to English. In the 1996, Private Education Act allowed English to be used as the medium of instruction in private higher education institutions, and, the 1996 Education Act legitimized the use of English in science and technology courses for Public higher education institutions. 2003 marked the beginning of the implementation of teaching science and mathematics in English for all primary and secondary education. This has not improved the public universities' graduates' proficiency in English. All these policies have not solved the problem.

The absence of knowledge management from the policy process could be a contributing factor. Effective knowledge sharing, utilization and creation cannot happen because not all stakeholders are involved in the policy-making. Policy makers only utilize the beliefs, values and interests of the individuals responsible for the policy. Government can rectify these problems by including all the stakeholders' knowledge in the database. The database must be managed efficiently and effectively for policy makers to ensure that the policy process can produce public policy which will benefit all Malaysians. The policy process of 1993 is summarized in figure 2.

Figure 2: A Summary of Policy process of Teaching Science and Technology in English for Higher Education Institutions (1993)

6 Conclusion

The paper begins with the brief introduction of Malaysia, the link of knowledge to the policy process, and to language policy in developing countries. Then, from the perspective of knowledge, an analysis has been performed on the language policy in Malaysia from the colonial period to the implementation of teaching science and technology in English in the higher education institutions.In conclusion, this paper highlights the continuous influence of colonial policy on the language policy in Malaysia until present and the continuing importance of English, even though Malay language is the national and official language.

The public voice was taken seriously by the policy makers during the colonial period. The Barnes committee fell through due to the Chinese and Indian communities' disapproval of the idea of trilingual schools.

After independence, the ethnic group which led the political sphere shaped the public policy. For examples, the medium of instruction for national education became Malay, and affirmative action policies were implemented. As the economy began globalization, economic factors gradually shaped public policies. The implementation of English as a medium of instruction for science and technology courses in PHEIs in Malaysia is a case in point. The initial idea of reintroducing teaching science and technology courses in English took hold because public universities' graduates' inability to converse in English hindered them from securing jobs in the expanding private sector. After independence also, the public voice can only exercise influence on public policies, in particular language policy, through electoral decisions.

In 1969, the response to the election result, led to the government's systematic transition from English language to Malay language, and emphasis on affirmative action to reduce the income disparity among the ethnic groups especially for the Malay and the indigenous.

In 2008, the National Front Party (which had ruled the country since 1970) failed to secure two thirds of the votes in the parliament. Since 2008, mass communication has been widely utilized by the public and by ministers, public meetings, and peaceful demonstrations have been held by political parties, interest groups and non-governmental organizations to express their opinions to influence government policies.

In 2009, a big rally was held to protest against the use of English for science and mathematics in primary and secondary education, and with the change of leadership, the focus has been on addressing the effectiveness of the language policy. It was decided that the teaching of science and mathematics in English at the basic educational level will be phased out by 2012. The government plan is to improve the teaching of English at the primary and secondary levels to ensure that the implementation of teaching science and technology in English at the higher education institutions will become more effective. At the initial stage, the Minister of Education signed a Memorandum of Understanding with Edith Cowan of West Australia for curriculum building and training of teachers [19]. In addition, qualified and experienced foreign teachers, English laboratories and books are in place [46].
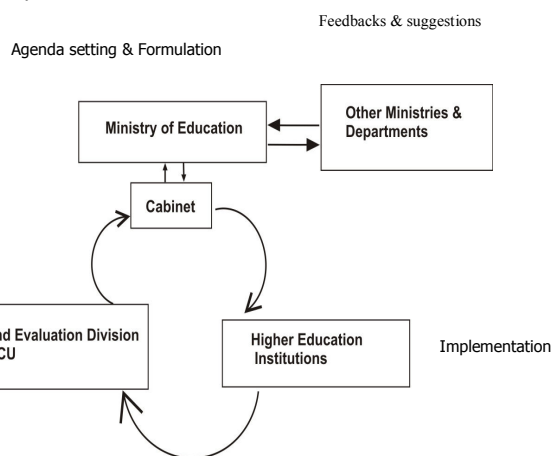
The current policy-making evidently reflects that the meta-policy is using a top-down approach, and is being made by the Federal government only. The agenda-setting and policy formulation are only occurring at the cabinet level of the Federal government. This restricts policy matters to the involvement of leaders, politicians and economists at the Federal level only, leaving out the other two government levels. The public policies, for example language policy and economic policy, do not complement each other. Rather the language policy has until now supported the economic policy. The implementation process is the responsibility of the frontline civil servants, and the policy evaluation involves a division of the Economic Planning Unit. The current policy-making system clearly prevents knowledge sharing, utilization and creation approaches from all level of governments and society as a whole. Therefore, there is a need to address this matter seriously from the knowledge management perspective. The management of the knowledge of all the stakeholders can improve knowledge sharing, utilization and creation in the policy-making process.

Field research on the policy process in Malaysia will be our next stage to clarify the meta-policy in Malaysia. The findings may help to improve the language education policy in Malaysia.

References:

[1] *A Profile of the Public Service of Malaysia*, London: Commonwealth Secretariat, 2004.

[2] Ammon, U. (Ed.), *The Dominance of English as a Language of Science: Effects on Other Languages and Language Communities*, Berlin: Mouton de Gruyter, 2001.

[3] Ammon, U. and McConnell, G., *English as an Academic Language in Europe*, Germany: Peter Lang, 2002.

[4] Ashford, L. R., Smith, R. R., Roger-Mark, D. S., Fikree, F. F. And Yinger, N.V. Creating windows of opportunity for policy change: Incorporating evidence into decentralized planning in Kenya, *Bulletin of the World Health Organisation*, Vol.84, No.8, 2006, pp.669-672.

[5] *BarnesReport*.http://en.wikipedia.org/wiki/Barnes_Report.Accessed March, 2010.

[6] Chan, S.H. and Tan, H., English for Mathematics and Science: Current Malaysia Language-in-Education Policies and Practices, *Language and Education*, Vol.20, No.4, 2006, pp.306-321.

[7] Crystal, D. *English as a Global Language,* (2nd Ed.), Cambridge: Cambridge University Press, 2003.

[8] *Economic Planning Unit*, http://www.epu.gov.my, Accessed March, 2010.

[9] Ferguson, J.E. , Mchombu, K. and Cummings, S., Meta-review and scoping study of the management of knowledge for development, *IKM Working Paper No 1*. http://www.ikmemergent.net/pdf/, March, 2008 Accessed 21 February 2010.

[10] Gill, S.K., *International Communication: English Language Challenges for Malaysia,* Serdang, Selangor: Universiti Putra Malaysia Press, 2002.

[11] Gill, S.K. Language Policy and Planning in Higher Education in Malaysia: A Nation in Linguistic Transition, http://ccat.sas.upenn.edu/plc/clpp/proposal/saranMalaysia.htm, 2003, Accessed 28 January 2009.

[12] Gill, S.K. , Medium-of-Instruction Policy in Higher Education in Malaysia: Nationalism Versus Internationalisation, In Tollefson, J.W. and Tsui, A.B.M. (Eds.), *Medium of Instruction Policies: Which agenda? Whose agenda?*New Jersey: Lawrence Erlbaum Associates, 2004, pp.135-151.

[13] Gill, S.K. , Medium of Instruction Change in Higher Education in Malaysia: The Reality of Attitudes and Implementation. Paper is based on a keynote address presented at the *International Conference on "Teaching English in Asia 1*" Organised by Universiti Utara Malaysia on November 14-16th, 2005.

[14] Gill, S.K., Language Policy in Malaysia: Reversing Direction. *Language Policy*, Vol.4, 2005, pp.241-260.

[15] Gill, S.K.,Change in Language Policy in Malaysia: The Reality of Implementation in Public Universities. *Current Issues in Language Planning*, Vol.7, No.1, pp.82-94. http://66.102.1.104/scholar?hl=ja&lr=&q=cache:3vT8v2bF9hQJ:www.channelviewpublications.net/clip/007/0082/cilp0070082.pd, 2006, Accessed 5 February 2009.

[16] Gill, S.K., Shift in Language Policy in Malaysia: Unraveling reasons for change, conflict and compromise in mother-tongue education, *AILA Review*, Vol.20, 2007, pp.106-122.

[17] Grabe, W. and Kaplan, R.B., Science, Technology, Language, and Information: Implications for language and language-in-education planning. *International Journal of the Sociology of Language*, Vol.59, 1986, pp.47-71.

[18] Graddol, D., *The Future of English*? London: British Council, 1997.

[19] Guna Pakar B. Inggeris Australia di Malaysia. *Utusan Malaysia*, Arkives Utusan online, http://ww.utusan.com.my, 8 August 2009, Accessed 10 August 2009.

[20] Haas, P. M. (Ed.), *Knowledge, Power, and International Policy Coordination*, South Carolina: University of South California Press, 1992.

[21] Hezri, A. A., Sustainability indicator system and policy process in Malaysia: a framework for

utilization and learning, *Journal of Environmental Management*, Vol.73, 2004, pp. 357-371.

[22]Horowitz, D. L., Is there a third-world policy process? *Policy Sciences,* Vol. 22, 1989, pp. 197-212.

[23] Jacobson, R., Aspects of Scholarly Language Use in Malaysia: Switching Codes in Formal Settings. In Ammon, U. (Ed.), *The Dominance of English as a Language of Science: Effects on Other Languages and Language Communities,* Berlin: Mouton de Gruyter, 2001, pp. 177-192.

[24]Jones, H., Policy-making as discourse: a review of recent knowledge-to-policy literature, *Working Paper No. 5. A Joint IKM Emergent-ODI*. http://www.ikmemergent.net/pdf/. , August, 2009, Accessed 1 February 2010.

[25]Kam, H.W. and Wong, R.Y.L., (Eds.), *Language Policies and Language Education*. Singapore: Times Academic Press, 2000.

[26]Kaplan, R.B., The Hegemony of English in Science and Technology, *Journal of Multilingual and Multicultural Development*, Vol.14, No.1 & 2, 1993, pp.151-172.

[27]Kaplan, B.K. and Baldauf Jr, R.B., *Language Planning from Practice to Theory*, Clevedon: Multilingual Matters, 1997.

[28]Kaplan, B.K. and Baldauf Jr, R.B., *Language and Language-in-Education Planning in the Pacific Basin,* Netherlands: Kluwer Academic, 2003.

[29]Kaplan, B. K., English―the Accidental Language of Science? In Ammon, U. (Ed.), *The Dominance of English as a Language of Science: Effects on Other Languages and Language Communities,* Berlin: Mouton de Gruyter, 2001, pp. 3-26.

[30]Law of Malaysia-Federal Constitution: Incorporating all amendments up to 1 January 2006. http://digitalibrary.my/.../718_Federal Constitution, 2006 Eng. pdf, Accessed 9 October 2009.

[31]Lee, M.N.N., Education in Malaysia: Toward Vision 2020. *School Effectiveness and School Improvement*, Vol.10, No.1, 1999, pp.86-98.

[32]Lemah BI, suka tukar kerja punca siswasah menggangur, *Utusan Malaysia*, Arkives Utusan online. http://ww.utusan.com.my, 27 February 2010, Accessed 28 February 2010.

[33]Lester, J. P. and Stewart, J., *Public Policy: An Evolutionary Approach*, Wadsworth: Belmont, 2000.

[34]Lin, A. M. Y. and Martin, P., (Eds.), *Decolonisation, Globalisation: Language-in-Education Policy and Practice*, Clevedon: Multilingual Matters, 2005.

[35]Lindblom,C. E., *Inquiry and Change. The Troubled Attempt to Understand and Shape Society,* New Haven: Yale University Press, 1990.

[36]Nonaka, I. and Takeuchi, H., *The Knowledge-Creating Company*, Oxford: New York, 1995.

[37]Omar, A.H., *Language Planning for Unity and Efficiency: A Study of the Language Status and Corpus Planning of Malaysia*, Kuala Lumpur: Penerbit Universiti Malaya, 1979.

[38]Omar, A.H., Language Spread and Recession in Malaysia and the Malay Archipelago. In Cooper, R.L. (Ed.). *Language Spread: Studies in Diffusion and Social Change,* Bloomington: Indiana University Press, 1982, pp. 198-213.

[39]Omar, A.H., *Language and Society in Malaysia,* Kuala Lumpur: Dewan Bahasa dan Pustaka, Kementerian Pelajaran Malaysia, 1982.

[40]Omar, A.H., The Language Policy of Malaysia: A Formula for Balanced Pluralism, In Bradley, D. (Ed.), Language Policy, Language Planning and Sociolinguistics in South-East Asia. Pacific Linguistics. Series A; no. 67, Papers in Southeast Asian Linguistics; no. 9, Canberra: Dept. of Linguistics, Research School of Pacific Studies, Australian National University, 1985, pp. 39-49.

[41]Omar, A.H. (Ed.), National Language and Communication in Multilingual Societies. Papers Presented at the Seventh Conference of the Asian Association on National Language (ASANAL) Kuala Lumpur: Dewan Bahasa dan Pustaka, Kementerian Pelajaran Malaysia, 1987.

[42]Omar, A.H., Language Policy and Management in Malaysia, *Journal of Asian Pacific Communication*, Vol.6, No.3, 1995, pp.157-165.

[43]Omar, A.H., Language planning and image building: the case of Malay in Malaysia, *International Journal of the Sociology of Language*, Vol.130, 1998, pp.49-65.

[44]Omar, A.H., Managing languages in conflict situation: A special reference to the policy on Malay and English in Malaysia, *Journal of Asian Pacific Communication*, Vol.10, No.2, 2000, pp.239-253.

[45]Omar, A.H., Malaysia and Brunei, In Simpson, A. (Ed.), *Language and National Identity in Asia*, Oxford: Oxford University Press, 2007, pp.337-359.

[46]Pengajaran Inggeris pasti ditingkatkan, *Utusan Malaysia*. Arkives Utusan online. http://ww.utusan.com.my, August 9, 2009, Accessed 10 August 2009.

[47]Pollard, A and Court, J., How Civil Society Organisations Use Evidence to Influence Policy Processes: A literature review, *Working Paper 249*, *Organisation Development Institute*, http://www.odi.org.uk, July 2005, Accessed 19 February 2010.

[48]Porter, W. R. and Hicks, I., Knowledge Utilization and the Process of Policy Formation, This paper was prepared by Porter/Novelli under its subcontract with the SARA Project. SARA is operated by the Academy for Educational Development as a

component of the HRAA Project of the Africa Bureau, U.S. Agency for International Development (AFR/SD/HRD).http://sara.aed.org/publications/cross_cutting/knowledge utilization/html/utilization.htm, 1995, Accessed 10 April 2009.

[49]Radaelli, C. M., The role of knowledge in the policy process, *Journal of European Public Policy,* Vol.2, No.2, 1995, pp.159-183.

[50]Rappa, A. L. and Wee, L., *Language Policy and Modernity in Southeast Asia,* New York: Springer, 2006.

[51]Ricento, T. (Ed.), *An Introduction to Language Policy: Theory and Method,* Oxford: Blackwell, 2006.

[52]Sains, matematik dalam Bahasa Malaysia mulai 2012, *Utusan Malaysia*, Arkives Utusan online. http://ww.utusan.com.my, July 8 2009, Accessed 8 July 2009.

[53]Schiffman, H.F., *Linguistic Culture and Language Policy*. New York: Routledge, 1996.

[54]Seventh Malaysian Plan: 1996-2005. http://www.epu.gov.my, Accessed 26 August 2009.

[55]Shohamy, E., *Language Policy: Hidden agendas and new approaches*, New York: Routledge, 2006.

[56]Takeuchi, H. and Nonaka, I., Hitotsubashi on Knowledege Management, Clementi Loop: John Wiley & sons(Asia), 2004.

[57]Tollefson, J.W. (Ed.), *Language Policies in Education: Critical Issues,* New Jersey: Lawrence Erlbaum Associates, 2002.

[58]Tollefson, J.W. and Tsui, A.B.M. (Eds.), *Medium of Instruction Policies - Which agenda? Whose agenda?* New Jersey: Lawrence Erlbaum Associates, 2004.

[59]Tsui, A.B. M. & Tollefson, J.W. (Eds.), *Language Policy, Culture and Identity in Asian Contexts*., New Jersey: Lawrence Erlbaum Associates, 2007.

[60]Vikor, L, Language Policy and Language Planning in Indonesia and Malaysia, In Svensson, T. & Sorensen, P. (Eds), *Indonesia and Malaysia: Scandinavian Studies in Contemporary Society,* London: Curzon Press, 1983, pp.47-73.

[61]Wawasan2020. http://www.wawasan2020.com/vision2.html, Accessed 16 September , 2009.

[62]Watson, J.K.P., Cultural Pluralism, Nation-Building and Educational Policies in Peninsular Malaysia. In Kennedy, C. (Ed.), *Language Planning and Language Education*, London: George Allen & Unwin, 1983, pp.132-150.

[63]Wellington, J and Osborne, J., *Language and Literacy in Science Education*, Philadelphia: Open University Press, 2001.

[64]Wong, R.Y.L and James, J.E., Malaysia, In Kam, H.W. & Wong, R.Y.L. (Eds.), *Language Policies*

and Language Education, Singapore: Times Academic Press, 2000, pp.209-240.

[65]Zaaba, Z. and Umemoto, K., Teaching Science and Technology in English: Language-in-Education Policy in Malaysia, *International Association for Intercultural Communication Studies Conference,* IAICS 2009, September 18-20, Kumamoto, Japan,this paper was submitted to International Association for Intercultural Communication Studies Journal, 30 November 2009.

[66]Zaaba, Z., Science and Technology Education in English: A Case Study of Language Policy in Malaysia, *The International Conference on the Social Science and Humanities,* ICOSH 2009, UKM, Malaysia , 2-3rd December, 2009.

[67]Zaaba, Z., Farida Ibrahim Mahmoud Ramadan, Haijon Gunggut, Ibianaflorinciliana Niane Anthony Aning, Katsuhiro Umemoto, Knowledge in The Policy Process, A Case Study of Language-in-Education in Malaysia, *The 1st International Conference of Policy Studies and Social Science 2010 (ICoPS 2010),* UiTM Sungai Petani, Kedah,Malaysia, , 26-27th May, 2010.