

# Chapter 4

## PERCEPTION OF KNOWLEDGE ABOUT S&T

### 4.0 INTRODUCTION

People’s perceptions of what they are tend to be reflected in what they do. And what they do is a measurement of their capabilities. Hence, knowing the people’s perception of knowledge of S&T is important in planning programs toward the achievement of the country’s future objectives. For this reason, this study continues to look at the public’s perception of their knowledge of S&T.

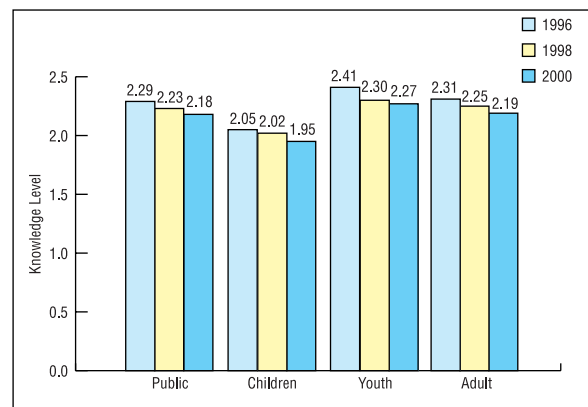
The two additional topics namely new technology and inventions and new inventions from Malaysia added in the 1998 study have now become part of the present questionnaire. It is retained to gauge the perceived knowledge levels in these topics, which reflect the technological progress of the country. It is necessary to collect data on the same variables in order to measure any status change in Malaysians’ perceived knowledge of S&T over the years.

### 4.1 KNOWLEDGE LEVELS IN VARIOUS S&T AND GENERAL ISSUES

Malaysians’ self-assessed level of knowledge about S&T continues to be poor over the years despite efforts to encourage S&T participation at all levels. Similar to the first three studies, only about two out of every ten Malaysians consider themselves to have average knowledge of S&T. On top of that, the overall level of knowledge has also gone down over the years.

The overall mean for perceived knowledge has continued to slip from 2.29 in 1996, to 2.23 in 1998, to 2.18 in the latest study (Figure 4.1). The drop in the overall mean of self-assessed level of knowledge is also observed in all age categories (Figure 4.1). The same measurement is used in all the studies where the scores of 1 represents *no knowledge* at all, 2 *poor knowledge*, 3 *average* and 4 represents *excellent* (Table A4.1). The mean score for all the issues has dropped with the exception of application of computer technology, new technology and inventions and new inventions from Malaysia (Figure A4.1 and Table A4.1).

**Figure 4.1: Perceived Knowledge of Various S&T and General Issues by Age Group**



Knowledge Level: 4 = Excellent, 3 = Average, 2 = Poor, 1 = None

Note : See Appendix Table A4.2

The mean score for various S&T and general issues ranged from a low of 1.81 in the application of nuclear technology, to a high of 2.95 in environmental pollution (Figure A4.1 and Table A4.1).

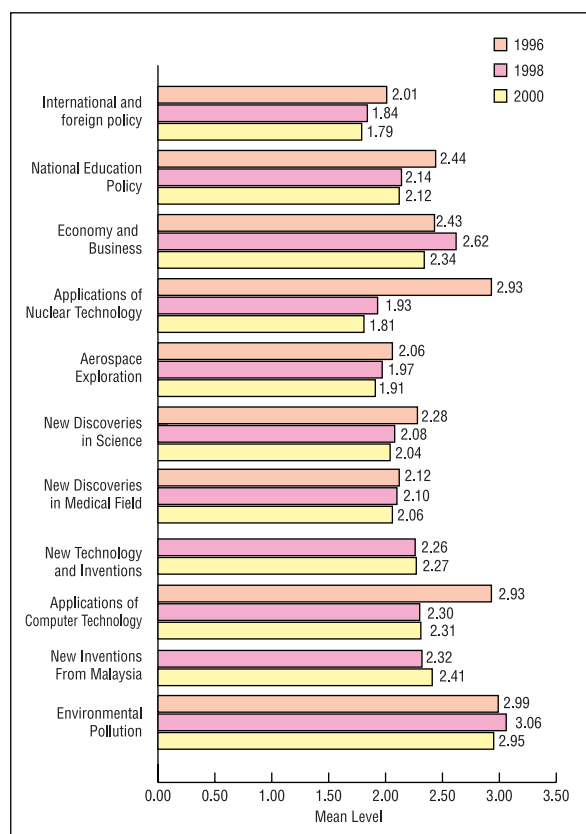
As in the previous studies, among the several topics or issues related to S&T, most respondents considered their knowledge to be excellent on environmental pollution. It is also noticed that the number in this category has gone down by about 5 percent, dropping from 34.4% (1998) to 29.8% in the current study. The mean score for this topic has also dropped from 3.06 (1998) to 2.95. At the same time, application of computer technology continues over the years to be the next S&T issue that the respondents claim to be most knowledgeable in. In the present study 12.3% of respondents considered themselves to be quite well informed on this issue.

It is also encouraging to note that among issues related to S&T, one of the two new topics added in the 1998 study, namely new inventions from Malaysia continues to be rated second in terms of mean knowledge. The mean score for this issue has gone up slightly to 2.41 from 2.32 previously. The wider coverage by the media around this issue could have been one of the reasons for the public's increased awareness of the existence of Malaysian inventions. This is certainly an encouraging development, in line with the national innovation agenda.

The percentage of respondents who rated their knowledge as excellent in various issues ranged from as low as 2.1% in international and foreign policies, to as high as 34.4% in environmental pollution (Table A4.1).

The continuous news coverage given by the media on environment-related issues could be one of the reasons why the respondents claimed to be relatively more knowledgeable about environmental pollution. Various publicity campaigns conducted by MOSTE and other agencies undoubtedly also helped contribute to this increase in public knowledge. While the 1998 study may have been influenced by the effect of the haze from forest burning in Indonesia in 1997 and the water shortage problem in Selangor, other environmental issues have cropped up over the years. Soil erosion, landslides, and the plan to build dams resulting in the depletion of forest reserve might have aroused a lot of interest and consequently increased the knowledge level on this issue.

**Figure A4.1: Public Perceived Knowledge of S&T and General Issues**



As for the general issues, the public continues to rate themselves to be most knowledgeable in the issue of the economy and business. While the economic crisis has shown some signs of recovery, the public's experience in this issue may have taught them to be more mindful of what is happening in this sector. In 1996 however (prior to the economic crisis), there was a slight difference when the respondents rated themselves almost equally knowledgeable in the National Educational Policy and the economy and business.

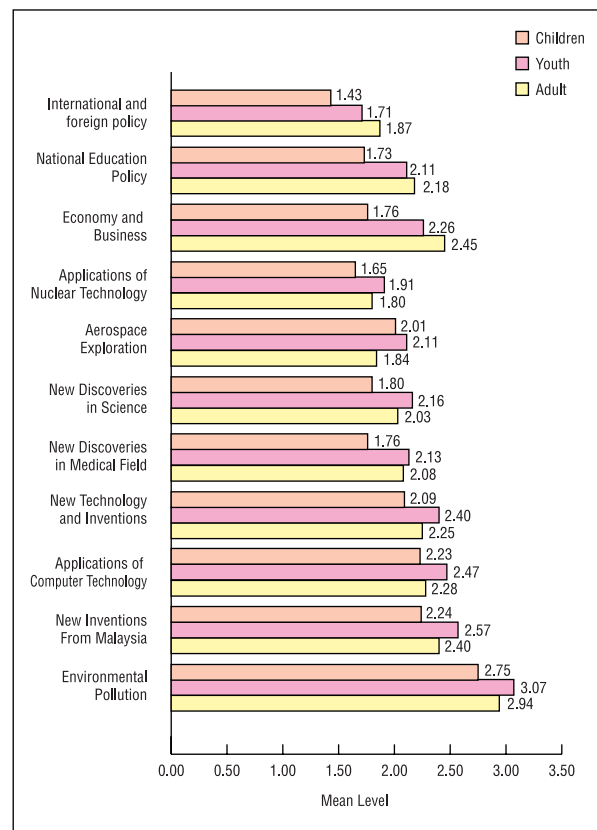
The lowest mean score among the S&T issues continues to be on the application of nuclear technology for producing energy, where this time almost five out of every ten respondents rated themselves not knowledgeable at all. Among the general issues, a large percentage of the public (43.5%) continues to claim that they do not have any knowledge at all in international and foreign policies. In the 1998 study 43.1% of the respondents perceived themselves as having no knowledge at all on this issue, while in 1996, one-third (33.0%) of the respondents made such a claim.

#### 4.2 A COMPARISON OF PERCEIVED KNOWLEDGE OF S&T AND GENERAL ISSUES BY AGE GROUP

The public's perceived knowledge of S&T and general issues continued to show significant differences between the different age groups (Table A4.2). The mean overall knowledge of the children continued to be lower (1.95) in comparison to the youth's (2.27) and the adults' (2.19). The same pattern was observed in the last study with the mean knowledge score recorded at 2.02, 2.30 and 2.25 respectively. The youth's mean knowledge score of all the S&T issues are higher in comparison to both the children and adults. Statistically, the difference in perceived knowledge of each issue by different age groups continued to be significant.

However, in terms of general issues, the adults claim to be more knowledgeable than the youths in all the three issues, namely, International policies, National Education Policy; and economy and business (Figure 4.1a, Tables A4.2 and A4.2a).

**Figure 4.1a: A Comparison of Perceived Knowledge of S&T and general issues by Age Group**



Overall mean knowledge: Children = 1.95 Youth = 2.27 Adult = 2.19

Knowledge Level: 4 = Excellent, 3 = Average, 2 = Poor, 1 = None

Note: See Appendix Table A4.2

#### 4.2.1 Children's Perceptions of Knowledge Level of S&T

Reflecting the government's seriousness in S&T, the government has set the target of 60:40 student ratio in the science and arts stream. Because of that, measuring the perceived knowledge level on S&T is important. In line with this objective, what is encouraging is that the children claim to be most knowledgeable in S&T issues in comparison to general issues like economy and business; and the national education policy (**Figure 4.1a and Table A4.2**).

What is also encouraging is that the application of computer technology continued to rank second for the three consecutive studies (**Figure A4.2a**). If this finding can be translated into the children's commitment in S&T in the latter years, it will be promising for the country.

Coming closely behind this issue is the children's perceived knowledge in new inventions from Malaysia. Nurturing this age group into inventors goes in line with the national innovation system, which is one of the study components under the review of the National Science, Engineering and Technology Policy.

#### 4.2.2 Youth Perceptions of Knowledge Level of S&T

The outcome of any effort to encourage the children's commitment to S&T should be reflected in the performance of the youth in the following years. The finding over the years has been fairly encouraging because although the overall mean knowledge of the different age groups has dropped, the youth group recorded the minimum drop (**Figure A4.2b and Table A4.2**). At the same time, although there is a drop in overall knowledge, the mean knowledge level in some of the issues has increased.

#### 4.2.3 Adult Perceptions of Knowledge Level of S&T

The adults' perception of knowledge of S&T has a very strong influence in the S&T agenda. The level of perceived knowledge, in a lot of instances, would affect decision-making, and in this case its relevance to the country's S&T agenda. Something of concern is that the perceived knowledge of the adults is only better in terms of general issues (international policy, national education policy and the economy and business) (**Figure 4.1a**).

The adults' mean level of knowledge of all issues has dropped over the years, except for new inventions from Malaysia (from 2.32 to 2.40), new technologies and inventions (2.24 to 2.25); and application of computer (from 2.26 to 2.28) (**Figure A4.2c and Table A4.2**).

### 4.3 A COMPARISON OF PUBLIC KNOWLEDGE OF S&T AND GENERAL ISSUES BY LEVEL OF EDUCATION

Education has a very important bearing on a person's level of knowledge. A better-educated person will normally be more knowledgeable compared to those less educated. For this reason, it is no surprise if the study indicates that the overall mean knowledge levels for respondents with primary education, secondary education and tertiary education are 1.66, 2.19 and 2.56 respectively. In the 1998 study, the order was also the same whereby the overall mean knowledge levels were 1.72, 2.25 and 2.64 respectively. At the same time, in all issues, respondents who had tertiary education rated themselves as the most knowledgeable (**Table A4.4**). Hence, the study indicates that the higher the education, the more knowledgeable a person.

Similarly, an analysis of variance of total knowledge indicates that respondents of different levels of education have different levels of knowledge in the issues discussed. The results are shown in **Table A4.5a**.

#### 4.3.1 Perceptions of Knowledge Level of S&T for Respondents with Primary Education or less

The level of self-assessed knowledge about S&T issues among those with primary education or less has decreased since the previous study.

Respondents in this category claim to be most knowledgeable in environmental pollution followed by new inventions from Malaysia. The mean levels for the two are 2.45 and 1.90 respectively. The same trend was also recorded in the previous study (2.62 and 1.81 respectively). Similarly, they claim to have the least knowledge in the application of nuclear technology (mean score of 1.37 against 1.43 previously).

In terms of general issues, the respondents perceive themselves to be most knowledgeable in the issue of the economy and business followed by the national education policy (**Figure A4.3a and Table A4.4**). However, although a similar pattern was observed in the earlier study, what is discouraging is that the mean levels for the two are lower. The mean levels for the two are 1.87 and 1.49 respectively compared to 2.19 and 1.57 previously.

#### 4.3.2 Perceptions of Knowledge Levels of S&T for Respondents with Secondary Education

The study shows that the perceived knowledge levels of respondents with secondary education continue to drop over the years. They also perceived themselves to be most knowledgeable in the same two areas as those with primary education. Reflecting the overall drop, the mean levels for both had gone down to 3.0 and 2.46 respectively from 3.10 and 2.37 previously (**Figure A4.3b and Table A4.4**).

In terms of general issues, the ranking of perceived knowledge levels is first, the economy and business followed by the new Economic Policy. The mean knowledge levels for both have also slipped slightly since the previous study. The high level of perceived knowledge for inventions among those with secondary education or less is very encouraging for a country heading towards an industrialized nation status.

#### 4.3.3 Perception of Knowledge Levels about S&T for Respondents with Tertiary Education

Perception of knowledge levels about S&T has also dropped over the years among respondents with tertiary education (**Figure A4.3c and Table A4.4**). At the same time, they also perceived themselves to be most knowledgeable in environmental pollution (mean level 3.20). However, in comparison to those with lower education, there is a slight difference in terms of the second issue that they claim to be most knowledgeable in. Next to the environment, they claim to be most knowledgeable in new technology and inventions. Hence, they are interested in inventions as well, but not necessarily inventions from Malaysia.

#### 4.3.4 A Comparison of Perceived Knowledge of S&T and General Issues by School Stream

Earlier, it has been shown that there is significant difference in perceived knowledge of S&T between respondents of different educational levels. When comparison is made between respondents of different school streams, it also indicates a significant difference. **Table A4.6 and A4.6a** illustrate the difference.

The study shows that respondents from different academic streams displayed different levels of average knowledge of the issues (**Table A4.6**). This is similar to the previous study, where respondents from the science stream continued to perceive a higher average knowledge in comparison to those from the other streams.

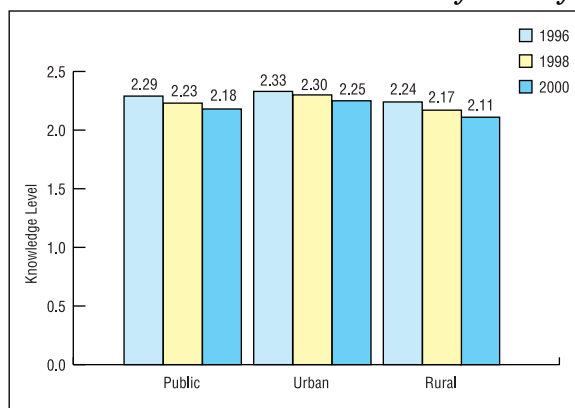
The results strengthen the need for increasing the number of students in the science stream as well as promoting science subjects in the other school streams.

#### 4.4 A COMPARISON OF PERCEIVED KNOWLEDGE OF S&T AND GENERAL ISSUES BY LOCALITY

The study continues to show that urban respondents perceive themselves to have higher knowledge in overall general and S&T issues when compared to the rural respondents (Figure 4.2 and 4.2a). The differences are significant in all the issues (Table A4.7 and Table A4.7a). On the same note, knowledge level for both urban and rural respondents continues to drop over the years. In general the results in the three studies were quite similar. Hence, serious efforts and programs need to be undertaken immediately to redress the imbalance between the knowledge levels of S&T of the urban people and those of the rural people.

Another observation, which should be of concern, is that, the mean perceived knowledge levels for most of the issues have gone down for the rural respondents. The mean levels of knowledge for nine of the issues have gone down while two have gone up (Table A4.7). The performance in the urban area is better balanced whereby the mean levels for five of the issues have gone up against six which have gone down (Table A4.7).

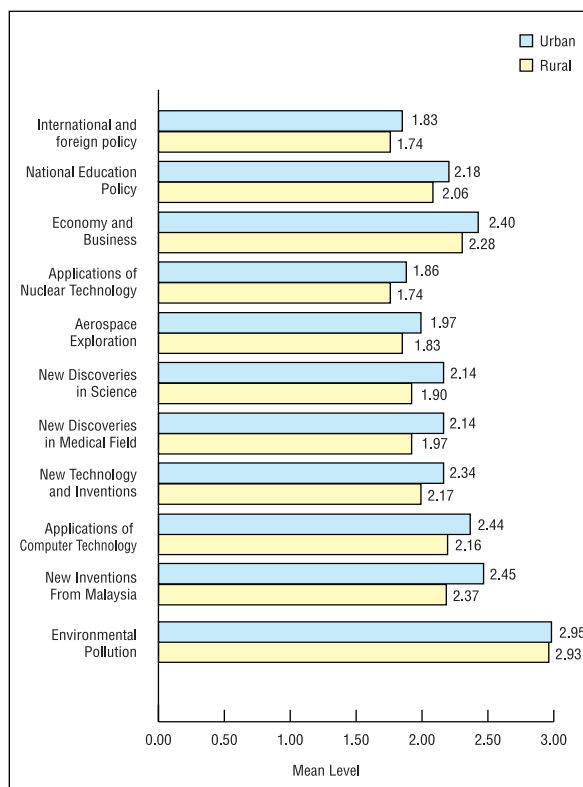
**Figure 4.2: Perceived Knowledge of Various S&T and General Issues by Locality**



Knowledge Level: 4 = Excellent, 3 = Average, 2 = Poor, 1 = None

Note : See Appendix Table A4.7

**Figure 4.2a: A Comparison of Perceived Knowledge of S&T and General issues by Locality**



Overall mean knowledge for urban: = 2.25, rural = 2.10  
 Knowledge Level: 4 = Excellent, 3 = Average, 2 = Poor, 1 = None

Note : See Appendix Table A4.7

4.4.1 Perceptions of Knowledge Level of S&T for Urban Respondents

In the analysis, a comparison was made between the mean score of overall knowledge for urban respondents, and the results are shown in **Figure 4.2a and Table A4.7**. In terms of S&T issues, urban respondents perceive themselves to be most knowledgeable in the issue of environmental pollution, followed by applications of computer technology and new inventions from Malaysia, with the latter two sharing second place. The urban respondents' perception of knowledge level of S&T issues also has dropped over the years (**Figure A4.4a**).

4.4.2 Perceptions of Knowledge Levels of S&T for Rural Respondents

Similar to the findings in urban areas, rural respondents' perceptions of knowledge levels of S&T issues continue to drop over the years (**Figure A4.4b and Table A4.7**). Perceived knowledge is highest for environmental pollution and new inventions from Malaysia. However, as may be expected, the mean levels for both issues are lower for the rural respondents. The mean levels for the two issues for rural respondents are 2.93 and 2.37 respectively, while for the urban respondents, they are 2.95 and 2.45.

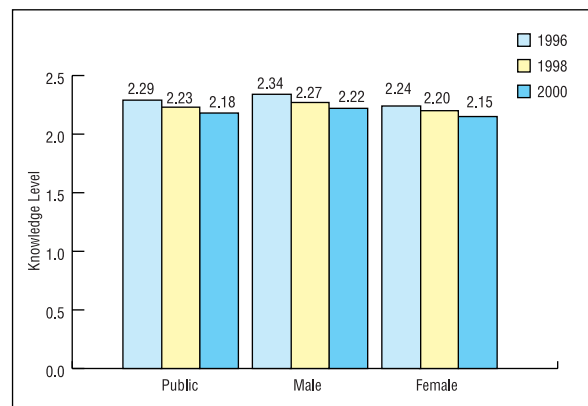
However, as stated earlier, another cause for concern, is that, for the rural areas, the mean perceived knowledge levels for most of the issues have gone down. The mean levels of knowledge for eight of the issues have gone down against three, which have gone up.

4.5 A COMPARISON OF PUBLIC KNOWLEDGE OF S&T AND GENERAL ISSUES BY GENDER

To see whether there is any significant difference in perceived knowledge levels according to gender, a comparison was made between the mean scores of overall knowledge of male and female respondents. The results are produced in an ANOVA test as shown in **Table A4.10a**.

The results indicate that male respondents perceive themselves to be more knowledgeable than female respondents in all issues except environmental pollution (**Figure 4.3, 4.3a and Table A4.10**). However, in terms of mean levels of knowledge of the issues discussed, there has been a decline in most of the issues for both male and female respondents. For both genders, there has been a decline in mean knowledge levels over eight of the issues. Six of the eight issues that recorded a drop in mean levels are the same for both male and female respondents.

**Figure 4.3: Perceived Knowledge of Various S&T and General Issues by Gender**



*Knowledge Level: 4 = Excellent, 3 = Average, 2 = Poor, 1 = None*  
 Note : See Appendix Table A4.10

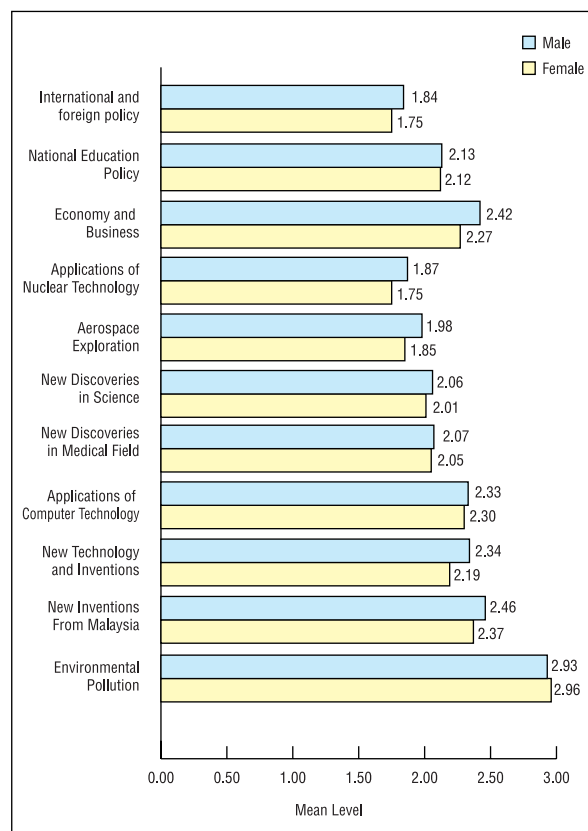
#### 4.5.1 Perceptions of Knowledge Level of S&T and General for Male Respondents

Male respondents continue to claim that among the S&T issues, they are most knowledgeable in the issue of environmental pollution (mean score of 2.93) followed by new inventions from Malaysia (mean score of 2.46). A similar pattern was also observed in the previous study. However, their level of perceived knowledge declined in five of the eight S&T issues. At the same time, their levels of perceived knowledge have gone down on all the three general issues. The drop includes those areas where the levels of knowledge had picked up slightly in the last study. The two S&T issues that picked up slightly in the last study were environmental pollution and applications of nuclear technology. Details of the findings are shown in **Figure A4.5a** and **Table A4.10**.

#### 4.5.2 Perceptions of Knowledge Levels of S&T and General Issues for Female Respondents

Female respondents' mean knowledge levels of S&T also continue to drop over the years. Similarly, respondents assessed themselves to have most knowledge in the issue of environmental pollution (mean score of 2.96) followed by new inventions from Malaysia (mean score of 2.37). The same pattern was also observed in the previous study. However, seven of the issues that reported a drop in level of perceived knowledge are S&T issues (**Figure A4.5b** and **Table A4.10**).

**Figure 4.3a: A Comparison of Public Perceived Knowledge of S&T and General Issues by Gender**



Overall mean knowledge : 2000 = 2.22, 1998 = 2.24, 1996 = 2.34  
 Knowledge Level: 4 = Excellent, 3 = Average, 2 = Poor, 1 = None  
 Note : See Appendix Table A4.10

### 4.6 SUMMARY

- Malaysians' self-assessed levels of knowledge about S&T continue to be poor over the years despite efforts to encourage S&T participation at all levels. In all three studies, only about two out of every ten Malaysians consider themselves to have average knowledge of S&T. On top of that, the overall level of knowledge has also gone down over the years.
- The overall mean for perceived knowledge has continued to slip from 2.29 in 1996, to 2.23 in 1998, to 2.18 in the latest study (**Figure 4.1**). The drop in the overall mean of self-assessed level of knowledge is also observed among all age categories (**Figure 4.1**).
- However, what is encouraging to note is that among issues related to S&T, one of the two new topics added in the 1998 study, namely new inventions from Malaysia continues to be rated second in term of mean knowledge. The mean score for this issue has gone up slightly to 2.41 from 2.32 previously.
- As for the general issues, the public continues to rate themselves to be most knowledgeable in the

issue of economy and business. While the economic crisis has shown some signs of recovery, the public's experience in this issue may have taught them to be more mindful of what is happening in this sector.

- The public's perceived knowledge of S&T and general issues continued to show significant difference between the different age groups (**Table A4.2**). The mean overall knowledge of the children continued to be lower (1.95) in comparison to the youth's (2.27) and the adults' (2.19). The same pattern was observed in the last study with the mean knowledge score recorded at 2.02, 2.30 and 2.25 respectively.
- Children claim to be more knowledgeable in S&T issues in comparison to general issues like the economy and business; and the national education policy. What is also encouraging is that the application of computer technology continue to rank second for the three consecutive studies. If this finding can be translated into the children's commitment in S&T in the latter years, it will be promising for the country.
- The finding over the years for the youth group has been fairly encouraging because although the overall mean knowledge of the different age groups has dropped, the youth recorded the minimum drop (**Table A4.2**). At the same time, although there is drop in overall knowledge, the mean knowledge level in some of the issues has increased
- The adults' overall mean level of knowledge has dropped over the years, except for new invention from Malaysia (from 2.32 to 2.39), new technologies and invention (2.24 to 2.25); and application of computer (from 2.26 to 2.28). The perceived knowledge of the adults is only better in term general issues (international policy, national education policy and economy and business).
- The study continues to indicate that there is significant difference in perceived knowledge of S&T between respondents of different educational level. The overall mean knowledge for respondents with primary education, secondary education and tertiary education are 1.77, 2.22 and 2.64 respectively. In the 1998 study, the order was also the same whereby the overall mean knowledge level were 1.72, 2.25 and 2.64 respectively.
- While education is significant determining the level of knowledge, the mean overall knowledge of respondents of the three education levels continues to go lower over the years.
- When comparison is made between respondents of different school stream, it also indicates a significant difference. The study shows that respondents from different academic streams display different levels of average knowledge of the issues (**Table A4.6 and A4.6a**). The three studies have shown that respondents from the science stream perceive a higher average knowledge in comparison to those from the other streams.
- Urban respondents continue to perceive that they have higher knowledge in overall general and S&T issues when compared to the rural respondents. The differences are significant in all the issues (see **Table A4.7 and Table A4.7a**).
- Another observation, which should be of concern, is that, the mean perceived knowledge level for most of the issues discussed has gone down for the rural respondents. The mean level of knowledge for eight of the issues has gone down against two, which have gone up (**Table 4.4b**). The performance in the urban area is better balanced whereby the mean level for five of the issues have gone up against four which have gone down (**Table 4.4a**).
- Results from the three studies indicate that male respondents perceive themselves to be more knowledgeable than female respondents in most of the issues discussed (**Table A4.4**). In fact in the latest studies, the male assessed themselves to be more knowledgeable in all the issues. However, in term of mean level of knowledge of the issues discussed, there has been a decline in most of the issues for both male and female respondents. For both genders, there has been a decline in mean knowledge level over eight of the issues (**Table 4.5a and 4.5b**). Six of the eight issues that recorded a drop in mean level are the same for both male and female respondents