



Principals Projections on the Malaysian Secondary School Future Curriculum

Saedah Siraj

Faculty of Education, University of Malaya

50603 Kuala Lumpur, Malaysia

Tel: 60-3-7967-5026 E-mail: saedah@um.edu.my

Azdalila Ali

Faculty of Education, University of Malaya

50603 Kuala Lumpur, Malaysia

Tel: 60-3-7967-5030 E-mail: azdalila@yahoo.com

Abstract

Study on future is involving a time-span to observe future alternatives as well as to identify the greatest events that are mostly like to occur in future while to assist the policy-makers and curriculum-designers to make decision. Longstreet and Shane (1993) however, emphasized that future planning does not mean to change what currently we already possessed instead of focusing on future-probabilities and the obtained-impacts in better future developments. The first basis, according to Saedah Siraj (2008a), is: future is a changing phenomenon compared to present day. The second, human creates something today and in future with what is planned, future-planning is arranged based on values and belief and the future begins from the present moment. Meanwhile, curriculum, or as clarify by Saedah Siraj (2001), is planning or designing education program. In this regards, the principals' projections on the types of future curriculums and curriculum contents at secondary schools in Malaysia would be the central discussion of this article. This study including earlier studies of Saedah Siraj and Mohd Paris Saleh (2003) and Saedah Siraj and Faridah Abdullah (2005) involved future planning/designing education program or as affirms by Saedah Siraj (2008a) is Future Curriculum. In general, the study goal is an attempt to attain consensus of the principals' projections on the types of future curriculums and curriculum contents at secondary schools in Malaysia where the study findings will also be discussed.

Keywords: Future, Future curriculum, Curriculum content, Future planning, Future projection, Secondary school

1. Introduction

Study on future is involving a time-span to observe future alternatives as well as to identify the greatest events that are mostly like to occur in future while to assist the policy-makers and curriculum-designers to make decision. Amara and Salancik (1971-1972) asserted that future is any activity which is increased understanding on the future products as the impacts of the present-day developments and today preferences. Longstreet and Shane (1993) however, emphasized that future planning does not mean to change what currently we already possessed instead of focusing on future-probabilities and the obtained-impacts in better future developments. The first basis, according to Saedah Siraj (2008a), is: future is a changing phenomenon compared to present day. The second, human creates something today and in future with what is planned, future-planning is arranged based on values and belief and the future begins from the present moment.

All the above discussions are reflections of study's goals on future (including the study on future curriculum and future education) among which are: provides possible projections and future choices in assisting the policy-makers and curriculum-designers to plan the desirable future as underlined by Ayers (1969) and to assist policy-makers and curriculum-designers in finalizing their decision-makings: firstly, in identifying the best future choices; and secondly, to identify the events which are mostly like to occur in the future.

Meanwhile, curriculum, according to Saedah Siraj (2001), is planning or designing education program. In this regards, the principals' projections on the types of future curriculums and curriculum contents at secondary schools in Malaysia would be the central discussion of this article. This study including earlier studies of Saedah Siraj and Mohd Paris Saleh (2003) and Saedah Siraj and Faridah Abdullah (2005) involved future planning/designing education program or as

affirms by Saedah Siraj (2008a) is Future Curriculum.

Most studies on future are conducted by the western scholars while the studies on future curriculum and curriculum content only grasps little attention in Malaysia. When only most minuscule studies is conducted on this subject, then not much domestic new inputs is obtainable as well as there are little new suggestions/ideas exist and these resulted little changes are made or can be made on this subject. In short, there are existing obstacles in applying changes in curriculum at all learning arenas nationwide while in the west, for instance, in the United States of America and Canada, both are far-advanced in improving and applying the virtual secondary school curriculum compared to Malaysia (*Virtual High School*, 2008; *Wikipedia*, 2008). As a consequence, the nation is left ten years behind US and Canada pertaining to the development and application of today virtual-curriculum.

The goal of this article is to discuss a study which attempts to attain consensus of the principals' projections on the types of future curriculums and curriculum contents at secondary schools in Malaysia. For this, the authors attempt to answer the following research question: What would be the principals' projections on the types of future curriculums and curriculum contents at secondary schools in Malaysia?

Among the important of this study are: The first, to know the future scenario of education at secondary school level in Malaysia. The second, the study findings can be used by the policy-makers and curriculum-designers to decide future education direction of a nation or institution. The third, the study findings can be utilized as a balance to decline any policy as well as any curriculum implementations that is going to damage or unbeneficial to the future generation and the nation. The fourth, policy-makers and curriculum-designers would be able to analyze: firstly, the today needs of the present secondary school students as well as to provide them the immediate solutions. Secondly, to project on the today secondary school students' future needs as well as to provide them possible future solutions including their future solutions on the national/international situations, challenges, and issues as to provide them the best ways and approaches to confront such challenging future phenomenon particularly future jobless crisis, future clashes between field of interest and carrier selection as well as future confrontation between the new education goals and life trends. In these regard, Saedah Siraj (2005) clarified that when the basis of curriculum does not further advances with future projection based on futurist views then the education's defects could be seen so obviously.

2. Model of Future Studies

Edwards (2008), who added the Wilber's three notions to four (Figure 2), clarified that there is deficient in the Wilber's notions that transpires in the process for the knowledge's accumulation and certification, which are: an interpretive/elucidative, reflective, assimilation stage that follows on from research-experience, observation and data collection.

Accordingly, an interpretive strand/aspect of Figure 2, (after get through the Slaughter's (2008) observations, the ICKM of Figure 2 bring forth the Knowledge of Creation in Future Studies or KCFS of Figure 3), is the non-variance in incorporating a subjective or a collective or a cultural fragment which grants a significant constituent in the Knowledge Cycle to clarify how data passed through filtered, structured, modified and interpreted before being articulated in a socially provable shape: 1) Introduction and literature review (lower right quadrant); 2) Method (upper right); 3) Results (upper left); 4) Discussion (lower left); and 5) Conclusion (returning to lower right).

Slaughter (2008) who observed KCFS via four different approaches of Future Studies: Forecasting, Delphi Technique, Scenario, and Causal Layered Analysis, affirmed that it is appropriate to use both KCFS and ICKM in today study on future. Accordingly, ICKM is applied in this study.

3. Methodology

3.1 Framework of the study

Based on earlier studies by Hiltz and Turoff (1993), Saedah Siraj and Mohd Paris Saleh (2003) and Saedah Siraj and Faridah Abdullah (2005), this study applied Delphi Technique for consensus attainment on the future curriculum and curriculum content at secondary schools of Malaysia.

There are two central entities in Delphi's processes: the first, each expert is granted the chance to evaluate other experts' views on similar topic; and the second, each expert is merely present her/his personal opinion (Saedah Siraj, 2008a).

Begins in 1950s at Rand Corporation, Santa Monica, California, the Delphi Technique was exercised to project the future US security requirements (Saedah Siraj, 2008ad) while today, it was applied in various fields, for instance, in 1971, in Education, it was applied to gather the views of penal of experts without placing them in a place (Cyphert & Grant, 1971).

Linstone and Turoff (1975) clarified that when the Delphi Technique is applied in a situational-study, other than the time and cost factors lead some experts are not viable to sit together; it is advisable and even better for the researcher to acquire the experts' subjective views. Both of them also emphasized that their above clarifications has nothing to do with the accuracy in Analytical Approach application.

Normally, there would be four Delphi Rounds though in some cases it may be fewer or more; and the Delphi process would be discontinued after a reasonable consensus attainment is achieved as well as the required information is obtained (Delbecq, Van de Ven, & Gustafson, 1975).

Based on above discussions and earlier discussed study goals, Delphi Technique is identified by the researchers as the most suitable approach to attain the experts' consensus on the projection of curriculum at secondary schools in Malaysia.

Panel of experts

The panel of experts for this study is not selected randomly, instead is selected according to specific criterion. For this research purposes, individual who is identified as an expert should comply with the following criterion: Firstly, an expert who has acquired knowledge, experiences, and trainings in the implementation of school curriculum. Secondly, an expert who has retained the post as school principal and has experience in school management for more than 10 ten years; and Thirdly, an expert who is willing to take part in three Delphi Rounds. Based on these criterions, ten experts were identified and assigned as the panel of experts where each two of them were principals of Smart School, Premier School and Boarding School while the other four were principals of national secondary school in Malaysia.

3.3 Data collection procedure

Data collections are carried out on three Delphi Rounds and the details of each round are as follows:

3.3.1 Delphi Round 1

With the purpose to acquire information on the types of future curriculum and curriculum content at secondary schools in Malaysia, the respondents are interviewed in Delphi Round 1. The data accessed from these interviews are then formulated as the basis to construct the following Delphi Rounds' survey questions.

3.3.2 Delphi Round 2

Likert's 5-points scales is utilized to decide on the years of projection when each type of future curriculum will be applied at secondary schools in Malaysia as well as to attain the experts' consensus on when each type of future curriculum content will be applied at secondary schools in Malaysia.

For data analysis, the following values will represent the occurrence years: I) 1-5 years = 5; II) 6-10 years = 4; III) 11-15 years = 3; IV) 16-20 years = 2; and V) after 20 years = 1. When the experts viewed that certain curriculum is not going to be applied then they would mark: V) after 20 years = 1.

3.3.3 Delphi Round 3

Questionnaires of Delphi Round 3 are similar to Round 2. Both median and IQR are attached to show the distribution of expert's views on each item. In this way, each expert is granted the chance to evaluate other experts' views in Delphi Round 2 so the expert may reconsider her/his answers in the next Round.

The expert's answer of this Round should be one of these: The first, constant with the previous answer if that answer is inside IQR. The second, the expert may change her/his previous answer if that answer is outside of IQR. The third, by offering reasons why the answer is remains the same; the expert is constant with her/his answer when that answer is outside of IQR.

The purpose of this Round is to narrow the gap of views differences among the experts and indirectly heading to attain the consensus.

3.4 Data analysis procedure

Data accessed from the interviews of Round 1 is thematically-analyzed – performing analysis according to specific themes. In this study, two themes have been identified: firstly, the types of curriculum; and secondly, the types of curriculum contents.

After receiving the feedbacks from the questionnaires of Rounds 2 and 3 then the data is analyzed based on min, median, and IQR. Projection on the occurrence years (the experts' levels of agreements) is based on the following median scores: I) 1-5 years = 4.5-5; II) 6-10 years = 3.5-4; III) 11-15 years = 2.5-3.49; IV) 16-20 years = 1.5-2.49; and V) after 20 years = 1-1.49.

The item's median is 4.5 to 5 when a type of curriculum is projected to be utilized at secondary schools in Malaysia are within 1 to 5 years. When the item's median is 3.5 to 4 means the years of curriculum utilization is within the next 6 to 10 years. A type of curriculum would be utilized at secondary schools in Malaysia within the next 11 to 15 years when the item's median is 2.5 to 3.49.

Moreover, when the item's median is 1.5 to 2.49 means the years of curriculum utilization is within the next 16 to 20 years; and when the item's median is 1 to 1.49 means the years of curriculum utilization is after 20 years. Similar scores are used to select the years of utilization of the curriculum contents.

3.5 Item consensus

The calculation of IQR is used to fix the relationships between each item and each expert where it will lead for the interpretation on the consensus of each item. The stages of consensus are fixed based on IQR as follows: I) High consensus = IQR is 0 to 1; II) Moderate consensus = IQR is 1.01 to 1.99; and III) Without consensus = IQR is 2.0 and above.

3.5.1 Item arrangement

The data is analyzed to arrange certain item according to the arrangement based on the consensus' attainment and the years of projection. The item's arrangement is based on the item's earned median score of Likert's 5-points scales rates. The item is considered high when its median score is 5 while it is considered the lowest when its median score is 1. Thus, it should be noted that in the analyzed data, the items are not arrange according to normal numerical arrangement instead is based on the earned median score.

3.6 Statistical analysis

The Central Tendency measurement is used in statistical analysis of this study. The feedbacks from the questionnaires of Delphi Rounds 2 and 3 are analyzed using the Frequency of Central Tendency to calculate its median and IQR. According to Martino (1972) the median is the most accurate statistical approach to show the group views as well as it is also able to show each particular view of the expert. In fact, it is recognized that IQR is the most accurate calculation compared to min to show the relationships between each expert and each item or its shows the IQR's views differences among the experts on each item.

4. Data analysis

Data analysis is conducted using Qualitative Approach for Delphi Round 1 and Quantitative Approach for Delphi Rounds 2 and 3. This data analysis will be able to show the principals' consensus on the projection of the types of future curriculums and the curriculum contents at secondary schools in Malaysia. This data analysis would be utilized to answer the following research questions: The first: What are the principals' projections on the types of future curriculums at secondary schools in Malaysia? And the second: What are the principals' projections on the types of future curriculum contents at secondary schools in Malaysia?

The under discussed data show that ten principals' responses where each two of them were principals of Smart School, Premier School and Boarding School while the other four were principals of national secondary school in Malaysia.

The data is analyzed using the Central Tendency measurement: median and IQR.

4.1 Analysis of Delphi Round 1

All penal of experts are interviewed in Delphi Round 1 to get their views on the projections of the types of future curriculums and curriculum contents will be applied at secondary schools in Malaysia. The researchers analyzed the interviews data based on the following themes: The first, the projections on the types of future curriculums at secondary schools in Malaysia; and the second, the projections on the types of future curriculum contents at secondary schools in Malaysia.

Feedbacks from the interviews of Delphi Round 1, which are analyzed for Delphi Round 2, shows the principals projected that there are 10 types of future curriculums will be applied at secondary schools in Malaysia. The types of future curriculums are divided into three categories: Science and Technology, Skill, and Format.

For the types of curriculum contents, the principals projected that there are 18 types of future curriculum contents will be applied at secondary schools in Malaysia. The types of curriculum contents are also divided into three categories: Science and technology, Skill, and Language.

Delphi Round 1 data analysis summations are listed below:

4.1.1 Analysis on the projections of the types of future curriculums at secondary schools in Malaysia

Sciences and technology

1. Additional interdisciplinary in the subjects of sciences, mathematics and technology.
2. Education technology-based curriculum.
3. Agriculture and biotech curriculum.
4. Alternative energy curriculum.

Skill

5. The concept of future communication system.
6. Problem solving-based curriculum.
7. Future planning competent-based curriculum.
8. Student's online interests and competent-based curriculum.

Format

9. Non-centralized curriculum or non-federal curriculum or school-based curriculum.
10. Home-schooling curriculum.

The principals projected that there are 10 types of future curriculums which will be applied at secondary schools in Malaysia. These curriculums are divided into three categories: Science and technology (4 types), Skills (4 types) and Format (2 types).

4.1.2 Analysis on Analysis on the projections of the types of future curriculum contents at secondary schools in Malaysia

Science and technology

1. Curriculum content containing Technology education.
2. Curriculum content containing comprehension and computer system application (design and invention) curriculum content.
3. Curriculum content containing information technology.
4. Curriculum content containing the more effective software applications including tutoring-software.
5. Curriculum content containing sciences, mathematics, and technology.
6. Curriculum content containing alternative energy.
7. Curriculum content containing agricultural-biotech.

Skill

8. Critical and creative thinking in planning the future skills.
9. Info-search skills.
10. Future jobs demand skills.
11. Problem solving skills.
12. Learning management skills.
13. Effective communicational skills.
14. Linked to student's interests and skills.

Humanity

15. Less emphasize on religious education and moral.
16. In future, the field of arts and humanities will get less attention.

Value

17. A more collaborative and interactive learning student.

Language

18. English language is customized in all subjects.

The results of interviews with ten principals show that they projected that there are 18 types of future curriculum contents will be applied at secondary schools in Malaysia where each 7 items are categorized under Science and technology and Skills, 2 items under Humanity, and each one under Value and Language.

4.2 Analysis of Delphi Round 2

Each principal is requested to answer the questionnaires on the projection years which are arranged according to Likert's 5-points scales: 5 = 1-5 years; 4 = 6-10 years; 3 = 11-15 years; 2 = 16-20 years; and 1 = after 20 year.

In Delphi Round 2, the data is analyzed using the Central of Tendency measurement: median and IQR and the latter are used by each item to find the levels of consensus among the penal of experts.

4.2.1 Analysis on the projection of the types of future curriculum will be applied at secondary schools in Malaysia

Table 1.1 shows the principals' projections on the types of future curriculums will be applied at secondary schools in Malaysia.

4.2.2 Analysis on the projection of the types of future curriculum contents will be applied at secondary schools in Malaysia

Table 2 shows the principals' projections on the types of future curriculum contents will be applied at secondary schools in Malaysia.

Overall summation of Delphi Round 2 data analysis shows that only one item does not attains any consensus and this indicates that there are no views differences among the experts on most items.

In order to confirm these findings, the questionnaires together with the summation of Delphi Round 2 data analysis will to be circulated again among the penal of experts.

4.3 Analysis of Delphi Round 3

The similar questionnaires to Delphi Round 2 are circulated to the panel of experts. When this data is analyzed then the questionnaires of Delphi Round 3 together with median and IQR analysis as well as all experts' previous answers are circulated again to each expert. In this Round, each expert is given the opportunity to reconsider back their answers: either consistent with their previous ones or substitute it with other answers. Those decided not to change are requested to attach their reasons.

The main goal of this Round is to attain the highest consensus among the experts. In this Round, the data is analyzed based on median and IQR. All data analysis tables of this Round will be shown later while the findings of this Round data analysis would be utilized to answer the research questions.

4.3.1 Analysis of the projection of the types of future curriculums will be applied at secondary schools in Malaysia

What would be the principals' projections on the types of future curriculums will be applied at secondary schools in Malaysia? To answer this, the analysis is divided into three parts: Sciences and technology, Skill and Format. Analysis is also conducted in three Delphi Rounds where all answers are depicted in Tables 3, 4 and 5.

Table 3 shows the principals' projections on the occurrence years of the types of future science and technology curriculums at secondary schools in Malaysia.

The principals' projections on the types of future skill curriculum will be applied at secondary schools in Malaysia is depicted at Table 4.

The principals' projections on the types of future format curriculums will be applied at secondary schools in Malaysia are depicted at Table 5.

4.3.2 Analysis on the projection of the types of future curriculum contents will be applied at secondary schools in Malaysia

What would be the principals' projections on the types of future curriculum contents will be applied at secondary schools in Malaysia? To answer this second research question, the analysis, which is also conducted in three Delphi Rounds, is divided into five parts: Science and technology; Skill; Humanity; Value; and Language. The answers for the above research question are depicted at Tables 6, 7, 8, 9 and 10.

Table 6 shows the principals' projections on the occurrence years of future science and technology curriculum contents at secondary schools in Malaysia.

The principals' projections on the types of future skill curriculum contents at secondary schools in Malaysia are depicted at Table 7.

Table 8 depicted the principals' projections on the types of future humanity curriculum contents at secondary schools in Malaysia.

Table 9 depicted the principals' projection on the types of future value curriculum contents at secondary schools in Malaysia.

Table 10 depicted the principals' projection on the types of future language curriculum contents at secondary schools in Malaysia.

5. Conclusion

The following are summary of the study findings:

5.1 Types of curriculum

The consensus among the principals is attained on all ten types of the following future curriculum will be applied at secondary schools in Malaysia: Additional interdisciplinary in the subjects of sciences, mathematics and technology; Education technology-based curriculum; Agriculture and biotech curriculum; Alternative energy curriculum; The concept of future communication system; Problem solving-based curriculum; Future planning competent-based curriculum; Student's online interests and competent-based curriculum; School-based curriculum; and Home-schooling curriculum.

5.2 Sciences and technology curriculum

The consensus among the principals is attained on four types of curriculums under the Category of Sciences and technology curriculum will be applied in future at secondary schools in Malaysia, namely: Education technology-based curriculum; Agriculture and biotech curriculum; Alternative energy curriculum; and Additional interdisciplinary in the subjects of sciences, mathematics and technology.

5.3 Skill curriculum

The consensus among the principals is attained on four types of curriculums under the Category of Skill curriculum will

be applied in future at secondary schools in Malaysia, namely: Future planning competent-based curriculum; Student's online interests and competent-based curriculum; Problem solving-based curriculum; and the concept of future communication system.

5.4 Format curriculum

The consensus among the principals is attained on two types of curriculums under the Category of Format curriculum will be applied in future at secondary schools in Malaysia, namely: School-based curriculum and Home-schooling curriculum.

The above first, second, third and fourth subtopics answered the first research question: What would be the principals' projections on the types of future curriculum will be applied at secondary schools in Malaysia?

5.5 Types of curriculum contents

The consensus among the principals is attained on the following 16 types of future curriculum contents will be applied at secondary schools in Malaysia: Curriculum content containing Technology education; Curriculum content containing comprehension and computer system application (design and invention) curriculum content; Curriculum content containing information technology; Curriculum content containing the more effective software applications including tutoring-software; Curriculum content containing sciences, mathematics, and technology; Curriculum content containing alternative energy; Curriculum content containing agricultural-biotech; Critical and creative thinking in planning the future skills; Info-search skills; Future jobs demand skills; Problem solving skills; Learning management skills; Effective communicational skills; Linked to student's interests and skills; In future, human sciences and arts will attain less attention; A more collaborative and interactive learning student; and English language is customized in all subjects. However, only 1 item (Less emphasize on religious education and moral) from the types of future curriculum contents failed to attain consensus among the principals.

5.6 Sciences and technology curriculum content

The consensus among the principals is attained on three types of curriculum contents under the Category of Sciences and technology curriculum content can be applied at secondary schools in Malaysia in 1 to 5 years from today, namely: Curriculum content containing information technology; Curriculum content containing the more effective software applications including tutoring-software; and Curriculum content containing sciences, mathematics, and technology while the consensus among the principals is attained on the other four types of curriculums under this Category, namely: Curriculum content containing Technology education; Curriculum content containing comprehension and computer system application (design and invention); Curriculum content containing alternative energy; and Curriculum content containing agricultural-biotech only can be applied in the next 6 to 10 years.

5.7 Skill curriculum content

The consensus among the principals is attained on six types of curriculum contents under the Category of Sciences and technology curriculum content can be applied at secondary schools in Malaysia in 1 to 5 years from today, namely: Critical and creative thinking in planning the future skills; Info-search skills; Future jobs demand skills; Problem solving skills; Learning management skills; Effective communicational skills while the consensus among the principals is attained on a type of curriculum under this Category, namely: Linked to student's interests and skills only can be applied in the next 6 to 10 years.

5.8 Humanity curriculum content

There is no consensus among the principals on a type of curriculum content under the Category of Humanity Curriculum Content, namely, less emphasis on religious education and moral. This shows that emphasizing on religious education and moral is vital in future Humanity curriculum content of the Malaysian secondary schools though it might happen that this (less emphasis is given on religious education and moral) in the next 16-20 years ahead as viewed by the consensus of the principals. However, the consensus among the principals is attained on a statement related to the Malaysian secondary schools' curriculum content, namely, the field of arts and humanities will be given less attention in future, not immediately but after the next 20 years.

5.9 Value curriculum content

The consensus among the principals is attained on the type curriculum content under the Category of Value curriculum content can be applied at secondary schools in Malaysia in 1 to 5 years from today, namely, A more collaborative and interactive learning student. This also shows that emphasizing on value and moral is essential in the future Value curriculum content of the Malaysian secondary schools.

5.10 Language curriculum content

The consensus among the principals is attained on the type curriculum content under the Category of Language

curriculum content can be applied at secondary schools in Malaysia but only in 11 to 15 years from today, namely, English language is customized in all subjects. These late implementation years might be related to the current problem's not enough English proficiency and skilled teachers particularly, for the subjects of science, mathematics, and even in English subject itself.

The above discussions on the fifth, the sixth, the seventh, the eighth, the ninth and the tenth subtopics replied the second research question: What would be the principals' projections on the types of future curriculum contents will be applied at secondary schools in Malaysia?

What the Malaysian government (the Ministry of Education Malaysia or MEM) should do without delay in facing the possibility of the implementation of the four types of the Science and Technology's curriculums at secondary schools of Malaysia, namely: Education technology-based curriculum and also Additional interdisciplinary in the subjects of sciences, mathematics and technology (will be applied in 1 to 5 years from today); Agriculture and biotech curriculum (will be applied in the next 6 to 10 years); and Alternative energy curriculum (will be applied in the next 11 to 15 years)? To answer these, the following are some of the authors' suggestions to the MEM: With the goal to have sufficient skill-teachers at all schools nationwide, particularly, in the following subjects: education technology, sciences, mathematics, agriculture, biotech, and alternative energy, the MEM collaborates with local and foreign universities to conduct special trainings or special higher studies program on the concerned subjects for trainee teachers and even the in-service teachers. Those undergone these programs should be offered the government scholarship, the periods of training or course or pursuing higher studies is recognized in-service as well as merits consideration in promotion exercises.

Moreover, the above four projected types of the Science and Technology curriculum, namely: Education technology-based curriculum and also Additional interdisciplinary in the subjects of sciences, mathematics and technology (will be applied in 1 to 5 years from today); Agriculture and biotech curriculum (will be applied in the next 6 to 10 years); and Alternative energy curriculum (will be applied in the next 11 to 15 years) necessitate the MEM, firstly, to shape a new education policy of the future since most probably education in future is more challenging than today, particularly, the virtual/wireless/mobile education; and secondly, to set up immediately an initial National ICT Curriculum Content Group (nictCCg). Its main function is to prepare and to develop a standard national ICT curriculum content and among its members are the experts of content and curriculum content, software designers and expert-teachers (in Malay, *guru pakar*) of the subject concerned.

What MEM should do straight away in facing the possibilities of the implementation of the four types of the Skill curriculum, namely: Future planning competent-based curriculum; The concept of future communication system; Problem solving-based curriculum (all these three will be applied in the next 6 to 10 years) and Student's online interests and competent-based curriculum (will be applied in the next 11 to 15 years)? For these, the MEM is recommended to offer the similar earlier discussed offers to the trainee teachers and the in-service teachers but MEM should regulates that those who are offered must pursue their higher degree studies in one of these fields: Future Studies, Future Communication System; and Curriculum (Competency-based and Problem solving-based).

What concurrently MEM should do in facing the possibility of the implementation of the two types of the Format curriculum, namely: School-based curriculum and Home-schooling curriculum in the next 11 to 15 years? The former necessitates that the school principals and assistant-principals acquired at least at school level, adequate curriculum knowledge as well as experiences in curriculum implementation while the latter requires sole Local Area Network (LAN), national/state/district/school regulate-server, education software designers, cheaper telecommunication rates and even lower costs for mobile/online appliances (Saedah Siraj, 2003, 2004). Certainly, Home-schooling offers more advantages to Special Education students as well as those who are the pencil's, the school's, the classroom's, the teacher's and even the naughty-friend's phobias. Other than that Home-schooling via mobile learning is non-costly compared to the current traditional schooling which yearly involved a colossi quantity of US Dollar in school-building constructions worldwide excluding another enormous amount of US Dollar spent for transportation, staff salaries, books, tuition's and school's fees, food and lodging (for those who live in hostel or home rent) and maintenance (Saedah Siraj, 2003, 2004).

The following are among the most interesting of the research findings: Critical and creative thinking in planning the future skills; Info-search skills; Future jobs demand skills; Problem solving skills; Learning management skills; Effective communicational skills; and Linked to student's interests and skills; whereas in the aspects of curriculum are: Future communication system; Future planning competent-based curriculum; Student's online interests and competent-based curriculum; and Problem solving-based curriculum. Most probably these skills/types of curriculums will turn into future mass attractions. Certainly, these kinds of training-patterns are indisputably required by the trainee teachers as well as in-service teachers. The current Malaysian education teaching curriculum should be restructured in congruent to the study findings and such it is compatible to the present and future worldwide multifarious advance development. Meanwhile, MEM should also offer new fields (such as future communication system, future planning) in

training the trainee teachers as well as to glitter the learning infrastructures developments, the school facilities including to turn the learning place in compliance to the future international education standard such as to maneuver the mobile or wireless or virtual teaching-learning environment.

One of the most important is student factor. As above discussed, all new environments, new fields like Info-search competency and Future communication system, and new learning styles such as the collaborative and interactive learning will certainly have positive and negative impacts on students. The most practical long-range and even short-range solution is that the study findings also verified the curriculum is emphasizing on religious education and moral is one of the shapes of future necessity. Significantly, this study is successful in identifying future probabilities that mostly going to occur where according to Saedah Siraj (2008a) it true though that human creates something today and in future with what is planned, future-planning is arranged based on values and belief; and certainly, the future begins from today.

All the above discussions show the reflections of the goals of study on future, including this study on future curriculum among which the authors provides possible experts' projections and future choices on the types of curriculums and curriculum contents that can be applied at secondary schools in Malaysia in a way to assist the policy-maker and curriculum-designers to plan for our children better longing-future.

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- Table 1. Summation of Delphi Round 2 data analysis: the principals' projections on the types of future curriculums will be applied at secondary schools in Malaysia

Item no.	Type of future curriculum	Median	Q1	Q2	*IQR
1	Additional interdisciplinary in the subjects of sciences, mathematics and technology	5	4	5	1
2	Education technology-based curriculum	5	4	5	1
3	Agriculture and biotech curriculum	4	4	5	1
4	Alternative energy curriculum	4	4	5	1
5	The concept of future communication system	5	4	5	1
6	Problem solving-based curriculum	4	4	5	1
7	Future planning competent-based curriculum	5	4	5	1
8	Student's online interests and competent-based curriculum	4	4	5	1
9	Non-centralized curriculum or non-federal curriculum or school-based curriculum	5	4	5	1
10	Home-schooling curriculum	5	4	5	1

Note. * = IQR = Q3-Q1.

Table 1 shows the summation of Delphi Round 2 data analysis on the types of future curriculum will be applied at secondary schools in Malaysia where all items attained consensus among the panel of experts. The median scores of each type of future curriculum is either 4 or 5 and IQR for all ten types of future curriculum is 1 which meant that the consensus (second highest) is attained among the principals on all the following types of future curriculum will be applied at secondary schools in Malaysia: Additional interdisciplinary in the subjects of sciences, mathematics and technology; Education technology-based curriculum; Agriculture and biotech curriculum; Alternative energy curriculum; The concept of future communication system; Problem solving-based curriculum; Future planning competent-based curriculum; Student's online interests and competent-based curriculum; School-based curriculum; and Home-schooling curriculum.

Table 2. Summarization of Delphi Round 2 data analysis: the principals' projections on the types of future curriculum contents will be applied at secondary schools in Malaysia

Item no.	Type of future curriculum	Median	Q1	Q2	*IQR
1	Curriculum content containing Technology education	4	4	4	0
2	Curriculum content containing comprehension and computer system application (design and invention) curriculum content	4	4	5	1
3	Curriculum content containing information technology	4.5	4	5	1
4	Curriculum content containing the more effective software applications including tutoring-software	5	4	5	1
5	Curriculum content containing sciences, mathematics, and technology	5	4	5	1
6	Curriculum content containing alternative energy	5	4	5	1
7	Curriculum content containing agricultural-biotech	5	4	5	1
8	Critical and creative thinking in planning the future skills	4.5	4	5	1
9	Info-search skills	4.5	4	5	1
10	Future jobs demand skills	4.5	4	5	1
11	Problem solving skills	5	4	5	1
12	Learning management skills	5	4	5	1
13	Effective communicational skills	4.5	4	5	1
14	Linked to student's interests and skills	4	4	5	1
15	Less emphasize on religious education and moral	1	1	4	3
16	In future, the field of arts and humanities will get less attention	4	4	5	1
17	A more collaborative and interactive learning student	4	3	4	1
18	English language is customized in all subjects	4	4	5	1

Note. * = IQR = Q3-Q1.

Table 2 shows the summation of Delphi Round 2 data analysis on the projection of the types of future curriculum contents will be applied at secondary schools in Malaysia. Item 1 (Curriculum content containing Technology education) attained the highest consensus (IQR is 0) among the panel of experts and only 1 item (item 15: Less emphasize on religious education and moral) failed to attain consensus while the rest (16 items) IQR scores is 1. Hence, the types of future curriculum contents will be applied at secondary schools in Malaysia are as follows: Curriculum content containing Technology education; Curriculum content containing comprehension and computer system application (design and invention) curriculum content; Curriculum content containing information technology; Curriculum content containing the more effective software applications including tutoring-software; Curriculum content containing sciences, mathematics, and technology; Curriculum content containing alternative energy; Curriculum content containing agricultural-biotech; Critical and creative thinking in planning the future skills; Info-search skills; Future jobs demand skills; Problem solving skills; Learning management skills; Effective communicational skills; Linked to student's interests and skills; In future, the field of arts and humanities will get less attention; A more collaborative and interactive learning student; and English language is customized in all subjects.

Table 3. The principals' projections on the occurrence years of future science and technology curriculums at secondary schools in Malaysia

*Item no.	Type of future sciences and technology curriculum	Median	Years of projection	IQR
1	Additional interdisciplinary in the subjects of science, mathematics and technology	5	1-5	0
2	Education technology-based curriculum	5	1-5	0
7	Agriculture and biotech curriculum	4	6-10	1
9	Alternative energy curriculum	2.5	11-15	1

Note. * = number is based on the results of Delphi Round 1.

Table 3 shows the median for items 1 and 2 is 5 which meant all types of Future Sciences and Technology curriculums projected will be applied at secondary schools in Malaysia within 1 to 5 years. Whereas item 7 (agriculture and biotech curriculum) will be applied at secondary schools in Malaysia within 6-10 years ahead. Item 9 (alternative energy curriculum) is the last one will be applied at secondary schools in Malaysia that is in the next 11-15 years. The types of curriculum of item 1 (Additional interdisciplinary in the subjects of science, mathematics and technology) and item 2 (Education technology-based curriculum) attained the highest consensus where its IQR is 0 that meant there is no views differences among the expert.

Table 4. The principals' projections on the occurrence years of future skill curriculum at secondary schools in Malaysia

*Item no.	Type of future skill curriculum	Median	Years of projection	IQR
5	The concept of future communication system	4	6-10	0
6	Problem solving-based curriculum	4	6-10	1
7	Future planning competent-based curriculum	4	6-10	1
8	Student's online interests and competent-based curriculum	3	11-15	1

Note. * = number is based on the result of Delphi Round 1.

Table 4 shows that all items attained high consensus where the IQR scores is either 0 or 1. Item 5 (The concept of future communication system) attained the highest consensus where the score of IQR is 0. Thus, there are no views differences among the experts. The score median is 4 for items 5, 6 and 7. Correspondingly, these curriculums (item 5: The concept of future communication system; item 6: Problem solving-based curriculum; and item 7: Future planning competent-based curriculum) will be applied within 6 to 10 years while item 8 (Student's online interests and competent-based curriculum) will be applied at secondary schools in Malaysia from 11 to 15 years from now. Overall, all items attained the experts' consensus.

Table 5. The principals' projections on the occurrence years of the types of future format curriculums at secondary schools in Malaysia

*Item no.	Type of future format curriculum	Median	Years of projection	IQR
9	Non-centralized curriculum or non-federal curriculum or school-based curriculum	3	11-15	1
10	Home-schooling curriculum	3	11-15	1

Note. * = number is based on the results of Delphi Round 1.

Based on Table 5, the median score for items 9 (School-based curriculum) and 10 (Home-schooling curriculum) is 3 while the IQR is 1. These demonstrated that both formats attained consensus among the experts, and correspondingly, both future formats will be applied at secondary schools in Malaysia in 11 to 15 years from today.

Table 6. Principals' projections on the occurrence years of future science and technology curriculum contents at secondary schools in Malaysia

*Item no.	Type of future science and technology curriculum content	Median	Years of projection	IQR
3	Curriculum content containing information technology	4.5	1-5	1
4	Curriculum content containing the more effective software applications including tutoring-software	5	1-5	0
5	Curriculum content containing sciences, mathematics, and technology	4.5	1-5	0
1	Curriculum content containing technology education	4	6-10	0
2	Curriculum content containing comprehension and computer system application (design and invention) curriculum content	4	6-10	1
6	Curriculum content containing alternative energy	4	6-10	0
7	Curriculum content containing agricultural-biotech	4	6-10	1

Note. * = number is based on the results of Delphi Round 1.

Table 6 shows the median for items 3, 4 and 5 is 4.5 to 5 which are the highest median scores depicted in the table and these also demonstrated that all experts attained consensus. Hence, these curriculum contents (items 3: Curriculum content containing information technology; item 4: Curriculum content containing the more effective software applications including tutoring-software; and item 5: Curriculum content containing sciences, mathematics, and technology) can be applied at secondary schools in Malaysia in 1 to 5 years from today.

The median for items 1, 2, 6 and 7 is 4 which meant these curriculum contents: Curriculum content containing Technology education (item 1); Curriculum content containing comprehension and computer system application (design and invention) (items 2); Curriculum content containing alternative energy (item 6); and Curriculum content containing agricultural-biotech (item 7) only can be applied at secondary schools in Malaysia in the next 6 to 10 years while three curriculum contents are attaining the highest consensus where each one IQR scores is 0, they are: Curriculum content containing the more effective software applications including tutoring-software (items 4); Curriculum content containing sciences, mathematics, and technology (item 5); and Curriculum content containing Technology education (item 1). In general, all items attained high consensus where each IQR scores either 0 or 1.

Table 7. The principals' projections on the types of future skill curriculum contents at secondary schools in Malaysia

*Item no.	Type of future skill curriculum content	Median	Years of projection	IQR
8	Critical and creative thinking in planning the future skills	5	1-5	1
9	Info-search skills	5	1-5	0
10	Future jobs demand skills	5	1-5	0
11	Problem solving skills	4.5	1-5	0
12	Learning management skills	4.5	1-5	1
13	Effective communicational skills	4.5	1-5	0
14	Linked to student's interests and skills	4	6-10	1

Note. * = number is based on the results of Delphi Round 1.

Table 7 shows that the median and IQR for 7 items of skills. The median for the above all types of curriculum contents are either 4.5 or 5 except item 14 (Linked to student's interests and skills) where it's median is 4. Item 8 (Critical and creative thinking in planning the future skills); item 9 (Info-search skills); item 10 (Future jobs demand skills); item 11 (Problem solving skills); item 12 (Learning management skills) and item 13 (Effective communicational skills) can be

applied at secondary schools in Malaysia in the next 1 to 5 years while item 14 (Linked to student's interests and skills) only can be applied in 6 to 10 years ahead. Item 9 (Info-search skills) and item 10 (Future jobs demand skills) attained the highest consensus where each Median is 5 and IQR scores is 0 which implicated that there are absent of views differences among the experts. Overall analysis demonstrated that all items attained high consensus where each IQR scores is either 0 or 1.

Table 8. The principals' projections on the occurrence years of the types of future humanity curriculum contents at secondary schools in Malaysia

*Item no.	Type of future humanity curriculum content	Median	Years of projection	IQR
15	Less emphasis on religious education and moral	2	16-20	3
16	In future, the field of arts and humanities will get less attention	1	After 20 years	1

Note. * = number is based on the results of Delphi Round 1.

Table 8 shows 2 items of the types of future humanity curriculum contents. Item 15 (Less emphasis on religious education and moral) does not attain consensus among the experts where its IQR is 3 (high). Apparently, all experts rejected that the future humanity curriculum contents at secondary schools in Malaysia should designate less emphasis on religious education and moral. However, item 16 (the field of arts and humanities will be given less attention in future) attained consensus among the experts where the median is 1 but this type of curriculum content will only be applied after 20 years from today.

Table 9. The principals' projection on the occurrence years of the types of future value curriculum contents at secondary schools in Malaysia

*Item no.	Type of future value curriculum content	Median	Years of projection	IQR
17	A more collaborative and interactive learning student	5	1-5	0

Note. * = number is based on the results of Delphi Round 1.

Table 9 shows the median and IQR for item 17. The median for item 17 is 5 (the highest median score). All experts attained consensus on this item where the IQR score is 0, which meant that there is no views differences among the experts. This finding encourages the students to apply the collaborative and interactive learning which is going to be practiced in the next 1 to 5 years.

Table 10. The principals' projection on the occurrence years of the types of future language curriculum contents at secondary schools in Malaysia

*Item no.	Type of future humanity curriculum content	Median	Years of projection	IQR
18	English language is customized in all subjects	2.5	11-15	1

Note. * = number is based on the results of Delphi Round 1.

Table 10 shows the median of item 18 (English language is customized in all subjects) is 2.5 which meant all experts attained consensus where its IQR is 1. This curriculum can only be applied in 11 to 15 years from today.

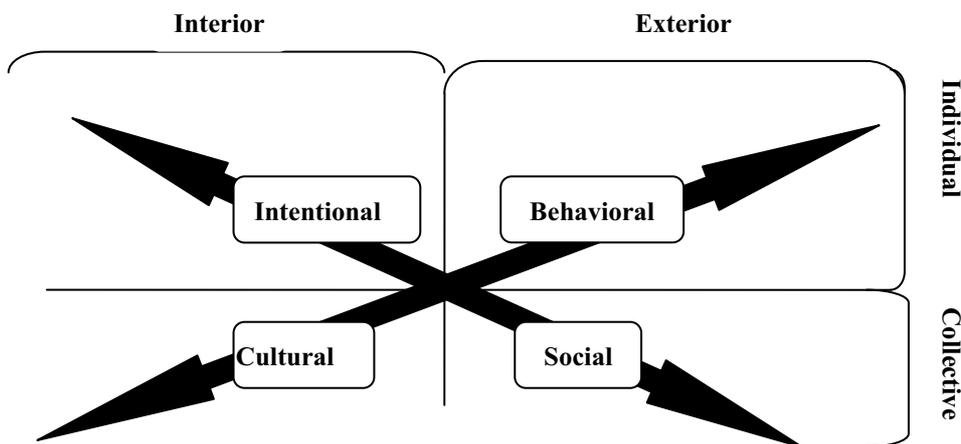


Figure 1. Four Quadrants Model of Wilber

Source. Richard A. Slaughter (2008), Knowledge creation, futures methodologies and the integral agenda. *Integral World*. (<http://www.integralworld.net/images/slaughter-3-1.jpg>).

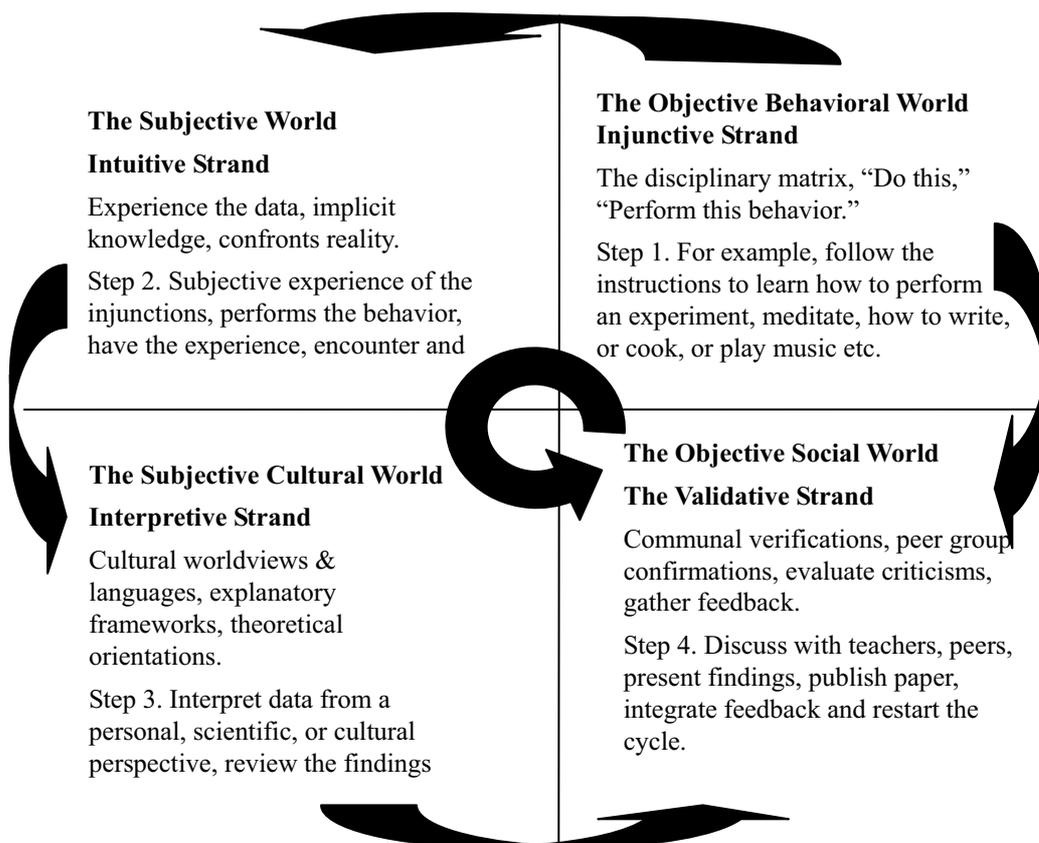


Figure 2. An Integral Cycle of Knowledge Model (ICKM)

Source. Mark Edwards (2008), The Integral Cycle of Knowledge: some thoughts on integrating Ken Wilber's developmental and epistemological models. *Integral World*. (<http://www.integralworld.net/images/edwards-1.gif>).

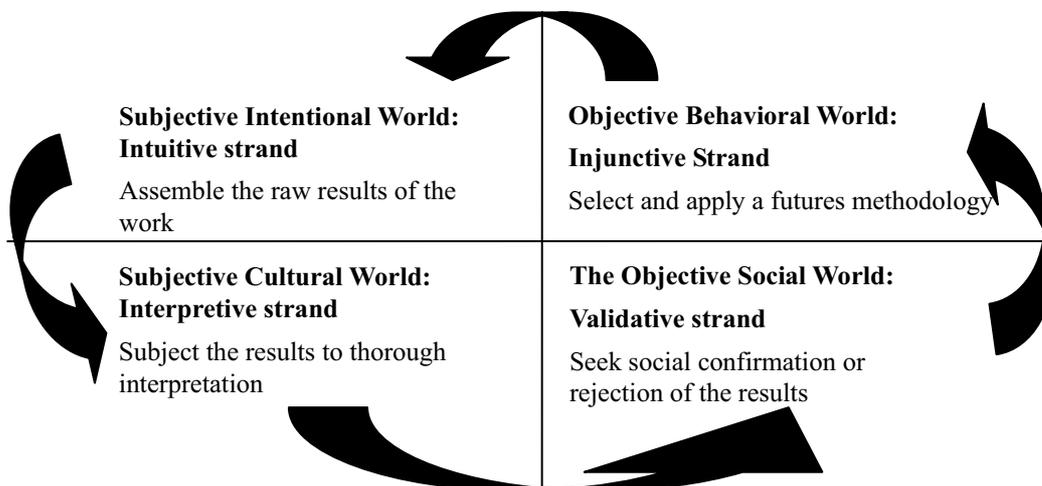


Figure 3. Knowledge of Creation in Future Studies

Source. Richard A. Slaughter (2008), Knowledge creation, futures methodologies and the integral agenda. *Integral World*. (<http://www.integralworld.net/images/slaughter-3-2.jpg>).