



03 The Meaning of Macao's Participation in PISA

What is PISA?

Pisa is a test assessing 15-year-old students. It is planned by the Organization for Economic Co-operation and Development (OECD). The full name for PISA is Programme for International Student Assessment.

The subject for PISA test is 15-year-old students. It is fundamentally assumed that students at the age of 15, have completed certain years of compulsory education and therefore must possess certain levels of knowledge and skills.

PISA test concerns the knowledge and skills that a modern person should have for his coming tens of years of life. In other words, PISA tests the knowledge and skills which a modern person should possess for life development and which can be used in his whole life; that is he can "analyze, reason and communicate effectively and continue the ability of long-life learning." In particular, reading, mathematics and science are the three main areas for PISA test.

Please pay attention, PISA looks at a modern person's ability to apply "knowledge and skills," "competencies" or "key subjects" to analyze, reason and communicate effectively. Therefore, the test questions for reading are designed to assess the extent to which a modern person can use his reading skills to interpret and examine various kinds of written material that he is likely to meet in his daily life; for mathematics, the test questions are designed mainly to assess the extent to which people can use their mathematical knowledge and skills to solve various kinds of mathematics-related problems that they are likely to meet in their life; whilst for science the test questions are designed to assess the extent to which students can use their scientific concepts and ways to understand problems that appear in their real-life situation.

Ways of PISA test

Through the overall planning of OECD and supporting from the participated countries and economies, the Headquarter of PISA, located at Paris, invited scholars of education, curriculum, teachings, test and appraisal from different places of the world to work in joint collaboration and pool the useful ideas to set up a large testing center. After years of planning and preparations, in the year 2000 they developed the characteristic programme for international student assessment which is applied across the world, on a long term and in depth basis, and with a focus on modern people's certain need of knowledge and skills in their daily life.

PISA test intends to use a comparison method, by which the participating countries and economies observe between themselves to work out an innovation plan through the tracks of references and checks on information materials, aimed at enhancing the social adaptation ability of next generation as a whole. 43 countries or economies participated in PISA 2000; 41 countries or economies participated in PISA 2003; 57 countries or economies participated in PISA 2006; and 64 countries or economies will participate in PISA 2009. There will be 30 OECD countries as well as 34 partner countries or economies participating in PISA 2009. Macao started to participate in PISA test in the year 2003 as partner country. Macao will participate in all later tests after the second of tests in PISA 2006.

The testing center of PISA Headquarter started to implement the long term Programme for International Student Assessment in the year 2000. The tests are administered every three years for testing students' reading, mathematics and science literacy. In this way, it allows the participating countries or economies to understand the learning performance and changing situations of students in different development angles and use it as references for planning long term educational policy.

Again, the PISA test is administered three times in every nine years as one cycle, and each time the test specializes in one particular subject so that it can aim at one particular subject for deeper analysis. For example, in 2000, 2003 and 2006, the PISA surveys focused on reading, mathematics and science, respectively. In the second cycle, in 2009, it will focus on reading, in PISA 2012 on mathematics and in 2015 on science. After two cycles, it will be able to know the trends of long term educational development trend of participating countries or economies.

When PISA test first took place in the year 2000, the participating students were mainly requested to take written tests. When electronic files are more common day by day, PISA test in 2009 will try to store the reading test questions as electronic files and students will have to answer on their computer screens. In future, it will use this advanced and quick statistical analysis to replace pencil-and-paper tests gradually.

The testing center of PISA Headquarter requested 4,500 to 100,000 selected students from each participating country or economy as testing object. In the year 2003 when Macao first participated in PISA test, it sampled 1,250 students from the secondary schools in Macao consciously and carefully. However, there was only a total of about six to seven thousand students in Macao region. Therefore, after a compromise is reached with PISA Headquarter, since the year 2006, all secondary school students in Macao will participate in the test except those that are of special cases.

Up to now, the work of PISA test in Macao is responsible and carried out by the PISA-Macao Research Team of Education Testing and Assessment Centre of Faculty of Education – University of Macau on appointment by the Education and Youth Affairs Bureau.





Performance of Macao Students

Macao participated in PISA 2003 and it was the first time since the beginning of recorded history that it participated in such international assessment programme which is an co-operation of international organizational groups; a comparison across the world with students as testing object; a long term and in depth development for many years on the literacy of modern people in fundamental subjects.

Since PISA is a comparison across the world, it enables the Macao public, especially those who concern about educational development to understand the learning performances of students from test results. Let us illustrate to our readers on results of PISA in 2003 and 2006 for 15-year-old students in Macao region.

But, first of all, it is necessary to point out that PISA test 2003 focused on mathematics with additional test on reading, science literacy and performance on solving problems. PISA test 2006 focused on science with additional test on reading and mathematics literacy. As this is a summary illustration, for test result details, please refer to the report of Education Testing and Assessment Research Centre, Faculty of Education-University of Macau.

Please go back to the situation of PISA 2003. Let us rank the performances of the participating 41 countries or economies of PISA 2003 into three ranks, high-scoring and moderate-scoring and below moderate. According to these ranks, the performance of 15-year-old students in Macao as a whole was in both high-scoring and moderate-scoring ranks. More specifically, the mathematical performance of 15-year-old students in Macao was high-scoring, reading performance was moderate-scoring, scientific and problem solving performance was high-scoring.

Then we go to the situation of PISA 2006. If we still classify the participating 57 countries or economies into three ranks, high-scoring and moderate-scoring and below moderate-scoring. So the performance of 15-year-old students in Macao as a whole was still in both high-scoring and moderate-scoring. In detail, the scientific performance of students in Macao was high-scoring, reading performance was moderate-scoring and mathematical performance was high-scoring.

Self-examination and Ardent Expectation

A simple analysis of the testing results PISA 2003 and 2006 reveals that compared with the other participating tens of countries and economies, the mathematical and scientific performances of students in Macao are high-scoring and reading performance was moderate-scoring.

From these two results, it is worth our self-examination on the moderate-scoring of reading performance of 15-year-old students in Macao. Judging by my understanding, this information already have direct impact on the policy revision of Macao's education. One of the proofs is that enhancement of reading education is one of the major points in the policy address of Chief Executive. In recent years, the Education and Youth Affairs Bureau has positively encouraged reading education of primary school students in different ways. For example, books supplementary expenditure was approved with priority; all secondary and primary schools took measures to complement the implementation positively. It was affected by this information directly.

Yet it needs the complement between the education administrative units and schools to encourage teachers to use interesting ways of teaching and strategies which are able to enhance students' reading ability. Furthermore, parents need to arrange a good reading environment for their children through the co-operation of schools and to be encouraged to read books together with their children as much as possible.

But one of the items «Investigation Report on the Resident's Quality of Macau Special Region» in the report 2006 announced by Macao Development Strategy Centre, mentioned that about half of Macao residents never read book and a one-sixth of families do not have books at home. It is now the right time for the government and citizens to co-operate and enhance a comprehensive reading practice for residents!

At last, we must make a supplementary illustration, the results of PISA tests besides allow us to understand the learning performance of Macao students, also design questionnaires to be answered by related persons. The Education and Youth Affairs Bureau may co-operate with the educational running groups of secondary and primary schools to find out the right measurements for educational development and reform.

Let us take an example. From the test result of PISA 2003, we discovered that the mathematical result of Macao students was not bad and the mathematical learning attitude of most of the students was positive. Students showed a strong learning motivation and had confidence in solving mathematical problems. But still some of the students were agitated and did not have sufficient confidence in learning mathematics. Again, most of them used to be learning by memory and neglected true understandings. All these brought attention to those who were concerned about secondary and primary schools education in Macao and especially those who were mathematics-related educational workers. They needed to try hard to improve.

In addition, research for the year 2006 showed that among all the participating countries and economies, Macao had the lowest percentage of family and socio-economic culture status being able to explain the changes in science literacy. This reflected that the fundamental educational system of Macao had provided average educational chances to students. Of course, we should not be satisfied. We had to sustain the principle of justice and integrity to provide a better learning chance to the minority groups of disadvantaged students.

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