

## Cultural differences in cognitive learning at International Schools

Madzy de Nooij director of Step One, providing educational guidance and career development, and Marian Riedel, former guidance counsellor at the Chinese International School and associate of Step One, conducted research to find out if and where, any cultural differences in cognitive learning and study styles existed between students of different cultures at International Schools.

Research results were concluded from a data base of 485 students ranging from 15 to 16 years of age who had all completed the Step One learning and study style survey *Prospero*. Student responses were divided into four cultural groups defined as students from: Northern Europe (106 students), North America (USA and Canada, 110 students), Southern Europe (91 students) and South East Asia (with a main focus on China and Taiwan, 178 students). In addition to these cultural groups, a group of students were selected who, according to Step Ones' psychometric assessment EuroQuest/InterQuest, have a high potential for academic success (175 students).

### Introduction

Learning and study styles are part of an individuals' personal disposition and can be influenced by such factors as culture, upbringing, education and motivation. It is an interest in the totality of the learning process that students undergo, as well as an attempt to better understand how an individual learns that inspired this research. For the purpose of this article, however, the common learning and study styles analyzed include:

- 1) *Perceiving Information*, which looks at the type of information that students prefer to have presented as in the case of a teacher providing an explanation, proposing concepts or giving instructions. For example, if the student prefers dealing with facts rather than imaginary information. This correlates with how well the student will remember the information. Terms used to describe differences in learning styles include tangible/concrete or abstract, random or step by step learners.

<i>Perceiving Information Styles</i>	Northern Europe	North America	Southern Europe	South East Asia	High Potential
Tangible step by step	47%	42%	46%	41%	45%
Tangible random	32%	31%	26%	16%	30%
Abstract step by step	32%	37%	40%	42%	33%
Abstract random	42%	43%	41%	33%	38%

- 2) *Processing Information*, which looks at the students' preferred way of assimilating new information. This is classified into the three styles: auditory, visual or tactile/kinaesthetic learning. It is about how the information is offered by the teacher and how each student would prefer processing it when he or she would have a choice.

<i>Processing Information Styles</i>	Northern Europe	North America	Southern Europe	South East Asia	High Potential
Auditory	26%	32%	33%	24%	28%
Visual	25%	25%	26%	34%	23%
Tactile/Kinaesthetic	18%	17%	11%	16%	19%
Combined	42%	25%	23%	24%	33%

- 3) *Learning Strategies*, which analysis how a student remembers information and closely links with the nine Multiple Intelligences as outlined by Dr Howard Gardner. These include linguistic reasoning, math-logical reasoning, spatial reasoning, musical/rhythmic reasoning, body-kinaesthetic movement, interpersonal connections, intrapersonal/self connections, naturalistic connections, and aesthetic connections.

<i>Learning Strategies</i>	Northern Europe	North America	Southern Europe	South East Asia	High Potential
Music	34%	44%	32%	39%	47%
Math	37%	29%	31%	31%	41%
Mechanical	23%	28%	22%	20%	16%
Word	44%	35%	30%	20%	38%
Nature	18%	24%	23%	24%	23%
Spatial	34%	20%	25%	26%	29%
Body	48%	40%	36%	34%	45%
Interactive self	80%	63%	76%	60%	70%
Interactive others	81%	65%	74%	63%	69%
Aesthetic	27%	21%	22%	21%	23%

- 4) *Responding to Information*, which looks at the way a student reacts to information presented and how they solve problems. Responses are classified into either performers, producers, discoverers, social relaters or individual thinkers/creators.

<i>Responding to Information Styles</i>	Northern Europe	North America	Southern Europe	South East Asia	High Potential
Performing	21%	33%	23%	17%	26%
Producing	40%	28%	26%	35%	32%
Discovering	27%	24%	27%	33%	31%
Relating	40%	37%	46%	35%	31%
Thinking	48%	45%	46%	50%	52%

In all the graphs above we applied the same scoring as in Prospero. Students could mark zero, one or more preferred styles in some of the categories. The boxes marked in grey show the highest score and those in yellow the lowest.

In terms of defining 'international students', all the students were in their teens and had been educated between one and ten years at an international school offering the International Baccalaureate (IB) curriculum. Generally speaking, this curriculum system and the way it is presented is different to what is offered by local state run schools of the various regions. It is assumed that the results of this research would have been greater in variation had a wider range of local schools formed the basis of the educational experiences of the students surveyed.

### **Student commonalities**

Generally speaking and regardless of any defined cultural group, with the exception of South East Asian students, all students had in common a preference for auditory learning when processing information. Equally, the least preferred learning style in information processing was tactile/kinaesthetic. All groups seemed to have a preference for step by step learning when perceiving information and indicated, almost equally, a tendency for 'discovering and thinking' about information. This is in line with the teaching style at international schools offering the inquiry based IB curriculum.

In the learning environment provided by international schools, students do enjoy studying by themselves almost as much as being involved in group activities, which should not to be confused with cooperative learning where motivation, responsibility and leadership can take away from the joy gained in the social aspects of group activities.

### **Differences between genders**

When comparing the results of the way students respond to information and education, girls are twice as keen on 'producing and relating' than boys while boys preferred to respond by 'performing and thinking'. In terms of strategies used for learning, girls are more inclined to apply a word based form of reasoning while boys preferred a more mathematical-logic based and mechanical form of reasoning when learning new information.

In addition to this, girls favoured more to work in an aesthetically pleasing workplace when learning than boys. With respect to perceiving information presented to students, boys are more open to methods that follow a tangible concrete style while girls preferred a more abstract approach. Finally, in terms of processing information girls are more visual and boys are slightly more auditory learners.

### **Northern European students**

Students from this cultural group had the greatest tendency to use a combined style of information processing (auditory, visual, tactile/kineasthetic). When the learning strategies were analyzed, it was noticed that these students had a preference for a word and math reasoning approach and these styles are mainly applied in schools which are helpful and supportive for these students to do well in class. Girls in this group seemed to especially indicate a high preference for body coordination. This was supported by interviews with these students where it was discovered that many of them seemed to study on the floor or while lying on their bed thereby showing that body coordination did play a role in their preference for studying.

### **North American students**

This group of students had the greatest preference for music as an aid for studying and many mentioned that they often listened to background music whilst completing their homework. However, this learning technique was also supported by a strong preference for mechanical reasoning. When questioned, during our interviews, as to how they studied some of them said that they made flash cards or that they designed their own quizzes.

When looking into how North American students respond to information they indicated a high interest in 'performing' in class. From our interviews we learned that these students have a high level of confidence in class presentations, or role plays and greatly enjoyed participating in group discussions. In support of this finding, these types of class activities are more prevalent in American and Canadian curriculum systems than in any other culture group represented.

Finally, in terms of responding to information, the boys in this group had the lowest score of all groups in 'producing' (15%). When we questioned these boys many of them did not seem to use their school agenda or to work according to a plan. They also had the lowest interest in the aesthetic of the work environment (5%) of any group. When responding to this finding, the boys mentioned that they could not really be bothered about an organised desk or proper binders as most of them preferred working on the computer and felt that this virtual environment was more aesthetic than a tangible desk, binder, etc.

### **Southern European students**

This cultural group contained the greatest number of abstract learners and had a strong preference for information to be presented in a step by step manner. In the interviews they claimed most of all that they like to connect information to real life situations.

These students did have the highest score of all groups in 'relating' in class. This can be explained by the fact that having time for family and for a social life is very much

part of the culture of the region. As a group they had the lowest score in 'producing'. We cannot give an explanation for this.

In terms of processing information, this group had a preference for auditory learning, especially the girls, and were the least likely to write abstracts, outlines or even take notes, unless they could copy directly from the board.

### **The Asian students**

This group of students showed a preference for abstract learning, as opposed to tangible learning. They also indicated to be much more into a step by step approach of learning as opposed to a random learning style. They did not seem to deal well with facts presented in a random fashion but rather preferred a systematic approach where facts could be related in a logical, step by step path.

This group was also the only group with a clear preference for visual learning, possibly due to the fact that it might be more difficult for quite a few of them to listen to classes taught in English, as for many students English is their second language. Another reason could be that in order to master the Chinese or Japanese language these students would have been exposed to 'pictorial learning' which could imply a preference for visual learning.

In terms of home study styles, this group did not really show any preferences. Their personal dispositions displayed in class showed a low preference for 'performing' but they favoured the approach of 'discovering and thinking'. During the interviews many explained that they did not like asking questions in class but would rather challenge information at home.

### **High potential students**

This group of students displayed a strong tendency for using a combined method of information processing, whilst their learning strategies showed them to have a high preference for music and math reasoning. The correlation of these two is known to be successful in education because research has shown that there is much evidence that supports the positive effects of music on one's ability to do math\*.

In terms of personal study styles, this group favoured moving around and taking regular breaks whilst they mostly responded to information by discovering and thinking.

### **Final thoughts**

After having worked in education, career and college counselling for many years and in a variety of geographical locations, this research was completed in order to gain insights into how students from different areas of the world prefer to study. This article covers generalities, but obviously there are many individual exceptions.

We strongly believe that identifying individual learning and study styles will provide students with the opportunity to strengthen and adopt more effective and efficient techniques that will be in line with personal preferences and learning styles, thereby creating a more efficient manner in which to approach the world of academics.

Coupled with this, students achieve a greater understanding about themselves as individuals and learners, thereby allowing them to create successful opportunities that suit their personal preferences, strengths and styles – all of which are tools necessary for success in life.

\* The Correlation between Music and Math: A Neurobiology Perspective

Cindy Zhan, 2002

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