

The Contribution of Arts Education to Children's Lives

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Current educational experiences highlighting the importance of arts education¹ have been advocated around the world. Programmes focussing on creativity-building education has attracted a great deal of attention. The movement encouraging arts activities within schools has attempted not only to promote the implementation of arts education in formal and non-formal settings, but also to improve the quality of education, appreciating the role of arts and creativity in school environment as a tool for promoting ethical values. As part of this movement, in November 1999, the Director-General of UNESCO launched an International Appeal for the Promotion of Arts Education and Creativity at School on the occasion of the 30th session of the General Conference of UNESCO. UNESCO's programme for arts education and creativity has been carried out by the UNESCO Culture Sector in cooperation with the Education Sector in the context of the World Forum on "Education for All," and in the spirit of the 1996 report entitled: *Learning – a Treasure Within*, from the International Commission on Education for the Twenty-first Century headed by Jacques Delors under the aegis of UNESCO, which underlines the urgent and essential need to reform and reinforce the school system, particularly, basic and primary education in developing countries, giving a special attention to creativity and arts education. Specialised NGOs dealing with arts education around the world such as the International Society for Education through Art (INSEA); the International Society for Music Education (ISME); the International Council for Music (IMC) and the International Drama/Theatre Education Association (IDEA) are also involved in this UNESCO initiative.

Within this framework, the programme has organised Regional Conferences on Arts Education since 2001 to exchange information on arts education among local experts and to develop a new pedagogical approach of arts activities. A number of regional conferences on arts education have been scheduled since 2001 around the world in order to study ways of introducing arts education into the school curricula. Three conferences have already been held in Africa, Latin America and the Caribbean, and the Arab States, the proceedings of which are available at the following webpage:

http://www.unesco.org/culture/creativity/education/html_eng/regional.shtml.

¹ Traditionally, educators used the term "art education" to refer to teaching and learning in the visual arts. However, corresponding to the movement of pluralism in the arts since the 1960s, the term "arts education" became the standard nomenclature (Efland, 1990), including other arts forms such as music, dance and drama.

Other meetings in the Pacific, Asia and Europe are now in preparation. Furthermore, a World Congress on Arts Education will be organised in 2004/2005 to study the various conclusions and recommendations of these regional conferences.

In addition to these Regional Conferences on Arts Education, the programme has launched a number of pilot projects for the training of primary school teachers in the fields of dance/music/drama and poetry/visual art in Africa and Latin America. A project entitled, “quality music education in Asian primary schools based on local and national music traditions” is being planned in Viet Nam, and in 2003/2004 in other Asian countries. Through this project, leading masters of traditional Asian music will be developing cooperation between local music institutions and primary schools in order to promote teacher’s training in initiating and performing traditional music in the school environment. The transmission and preservation of musical traditions, apart from their cultural and ethical mission, are also intended to contribute to encouraging the development of potential and creativity. The nation’s unity and responsibility may well be appreciated in terms of children’s spirit.

UNESCO also aims to create an international network of other regional and national bodies, dealing actively with arts education. Many organisations and individuals around the world have already conducted extensive research and field activities in arts education. However, since arts education covers a wide range of topics, encompassing diversified issues, UNESCO is willing to co-ordinate all current and future actions and research in the arts education field through an active network of artists and educators. This paper introduces research results related to how the arts contribute to education from five viewpoints: aesthetic development; socio-emotional development; socio-cultural development; cognitive development and academic achievement.

Aesthetic Development

Research projects show how appropriate introduction of arts education in curricula improves students’ aesthetic development. A cross-cultural study of pre-schoolers, a total of two hundred fifteen pre-kindergarteners and two hundred twenty eight kindergarteners, conducted in Tel Aviv, Israel and Ohio, in the United States, shows the value of arts education instruction. In this study, students in both countries who went through *visual art* activities with teacher supervision achieved significantly larger improvement of **artistic development** compared to those without teacher supervision. A study regarding music compositional processes of secondary school students in Korea also demonstrates that “visual thinking” provided by *tools of composing music* such as computer and graphic notations increased the variety of students’ **music compositional strategies**. Moreover, an ethnographical observation of seventeen urban third and fourth-grade students² in the

² Students are from 8 to 10 years old

United States shows that children, who initially considered theatre as something only fun and imitative, can gradually learn that drama is constructed by underlying structures. Playing roles as an actor, a critic, or a character in classroom *theatre*, the children understand **the disciplines of dramatic expression and the nature of theatrical interpretation**. In Brazil, the “Art and ICT Resource Project” for fifteen to eighteen year old students shows that to learn other ways of *making works of art through a computer* stimulates students’ **artistic skills**.

Appropriate arts activities not only offer children better artistic development but also enhance their appreciation of the arts. The experience of a “Theatre 9³” class comprised of American high school students who were chosen to participate in a *play* related to “Alice in Wonderland” resulted in obtaining **better knowledge and comprehension of a play and a positive attitude toward theatre arts**. In Chile, a *visual art* programme to teach artistic appreciation and expression to six to ten year old and fifteen to eighteen year old children (two hours per week for nine months), found that students not only develop their capacities to create and express, but also to understand **the values of universal arts and Chilean arts**. Furthermore, by selecting four elementary schools composed of more than six hundred students in grades two, four and five, an empirical evaluation of the “SPECTRA+ Program⁴,” evaluated the students’ development under three conditions; SPECTRA+, an innovative whole language programme, and a traditional curriculum by using several empirical pre-/post- tests & other evaluation methods. The results of the programme conducted during 1992-93 at Hamilton and Fairfield in Ohio, the United States, show that the SPECTRA+ students’ scores of **appreciation of the arts** measured by the Arts Appreciation Scale were higher than those in the other two groups.

Socio-emotional Development

Arts activities also enhance children’s self-awareness, self-confidence and acceptance of others. A study implemented at two inner city elementary schools in New Jersey, the United States, offered the “Arts Alternatives Program” to students in grade four, five, and six from low socio-economic status families. Researchers measured students attitudinal changes by using an attitude scale. Through this *dramatics* programme using a variety of role-playing and story writing activities, students showed **better attitudes of self-expression, trust, self-acceptance, acceptance of others, self-awareness and empowerment**. According to an evaluation of the above-mentioned “SPECTRA+ Program,” students in the interdisciplinary art programme (SPECTRA+) and the language programme have positive “**parental self-stream**,” that is, their expectations of how their parents appraise them. Moreover, Trusty and Oliva reveal that there is positive relationship between

³ “Theatre 9 is an introductory theatre class for ninth grade students that includes units on theatre environment, dramatic improvisation, pantomime, voice, teacher directed production and student directed scenes.” (Rosen)

⁴ An art education initiative model aiming to provide all students one hour daily instruction in *music, drama, dance, art, or media arts*.

music participation and **self-concept** through many U.S. studies with measurable results in the emotional and social development of children.

In addition to the development of those intrapersonal abilities, several research efforts explain the change of children’s attitude. The “Humanitas Program” in Los Angeles Unified School District, implemented by the interdisciplinary method combining literature and social studies with *arts* was offered to eleventh-grade high school students in a team-learning method. The voluntary-basis participants show **higher class attendance** and significantly **lower drop-out rate** from school than non-Humanitas students.

Figure 1: The Humanitas Program Evaluation 1990-1991
School Dropout Rates of High-Risk Students

| School Dropout Rates of High-Risk Students in Humanitas and Comparison Classes | | |
|--|---------|-------------|
| | Dropped | Not Dropped |
| Humanitas | 1 % | 99 % |
| Comparison | 7 % | 93 % |

Achbacher, P. & Herman, J. (1991). *The Humanitas Program evaluation, 1990-91*. Center for the Study of Evaluation, UCLA Graduate School of Education, Los Angeles, California. Cited by Morrison Institute for Public Policy/National Endowment for the Arts (1995, June). *School, communities, and the Arts: A research compendium*. <<http://www.asu.edu/copp/morrison/public/school.pdf>>

By using meta-analysis⁵ and verifying approximately four hundred qualitative studies in *dance*, *music*, *theatre*, and *visual arts*, the Association for the Advancement of Arts education (AAAE) in the United States shows that arts education **keeps students in schools**, especially, those at-risk or with distinctive learning styles by directing their energies at arts activities through a more disciplined educational environment.

Arts activities not only reduce children’s negative attitudes toward school, but also can help children develop a positive attitude, such as motivation. The National Longitudinal Study, conducted from 1991 to 1994, shows the positive effects of an arts-based programme. The “Different Ways of Knowing” programme launched by the Galef Institute of Los Angeles aims to improve learning achievement for a total of nine hundred and twenty high-risk elementary school children by integrating *visual* and *performing arts* with social studies and other subjects. By implementing interdisciplinary teaching through the arts under a more interactive and more student-initiated atmosphere, students show more **enthusiasm**, **motivation** and **engagement in learning** by recognizing **the value of making efforts to achieve**. The “Learning to Read Through the Arts”

⁵ Meta-analysis is “a way of combining statistical results from a number of quantitative studies into a single finding.” (Krathwohl, 1998)

programme (LTRTA), a Title I⁶ Program for elementary students in New York, offered *music* and *other arts* curricula to six hundred and seventy seven regular students and nine hundred and seven special education students in order to emphasise listening, speaking, reading, and writing skills. All grades exceeded the programme objectives measured by several tests⁷. Teachers also observed improvement of student **behaviours in terms of greater motivation to read, awakening of student interest and emotional growth** in some sixth graders.

While arts activities support the development of children's positive attitude toward themselves, they stimulate children's positive social interactions and improve their ability to socialise. A study conducted by Miller, Rynders, Schleien shows that *drama* can encourage the interaction between students with and without mental retardation. They prepared an experiential setting by dividing twenty four fifth-grade American elementary students from regular and special education into two groups: one participated in the "Acting Together" drama programme and the other in indoor and outdoor non-competitive games. A trained observer recorded their social interaction by using a timed-interval sampling procedure. Even though the scores on social interaction of the two groups before the programme are the same, students without mental retardation in the drama group showed more **positive social interaction** with students with mental retardation than the other at post-test. The artist-in-residency programme, initiated by the Wolf Trap Institute in Washington, D.C. and investigated by the Harvard Project Zero project, offers *music*, *movement* and *drama* to low-income pre-school students. According to classroom observations, interviews and analysis of materials, the participants of this programme show **higher levels of class engagement**, such as the level of attentiveness, participation and student interaction with their friends than non-Wolf Trap classes. Furthermore, a review of primary schools in England from 1994 to 1998, released by the Office for Standards in Education (OFSTED) "to comment on the strengths and weaknesses of the maintained primary schools in England," showed the results of an investigation over eighteen thousand primary schools from individual lesson observation forms to published inspection reports. The review explains that humanities and arts subjects have more impact on students' **spiritual, moral, social, and cultural development** than design and technology, science, mathematics, and information technology. Moreover, research conducted by Yamaha Music Foundation in Japan concludes that students who take piano lessons have a **better sense of moral and social skills** than those taking swimming lessons. Since music lessons were implemented in one specific institution, the educational policy of the institution might have influenced the result. However, according to the researcher, the result came from the fact that

⁶ Title I is a part of the Improving America's Schools Act (IASA) for "Helping Disadvantaged Children Meet High Standards." (Wisconsin Department of Public Instruction.)

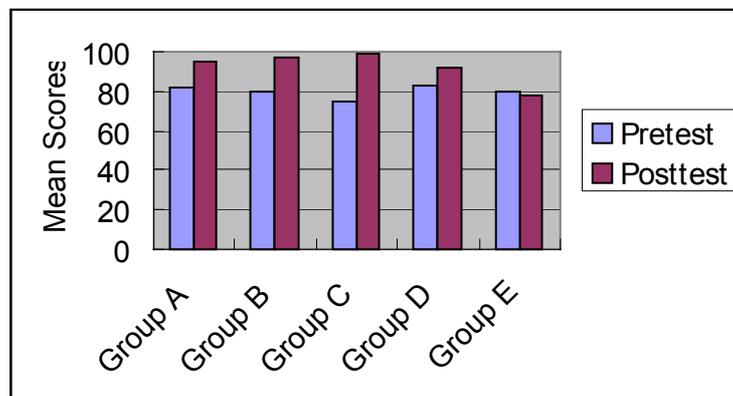
⁷ California Achievement Test scores and the Wisconsin Design Skill Development Test.

children taking piano lessons have to be more patient, disciplining themselves to daily piano practice.

Socio-cultural Development

Through arts education, children can enhance their non-biased and positive attitude toward the society by acquiring appropriate communication skills. The data collection of AAAE illustrates that children can improve their interpersonal skills such as **teamwork skills**, **tolerance**, and **appreciation of diversity in people and ideas**, and **effective communication ability**. For example, the fourth-grade classrooms in a suburban elementary school in Arizona, the United States, were divided into five groups and four were taught about Native American *music* using an interdisciplinary approach. through various techniques such as Native American instruments, guest artists, etc, and one control group was taught traditional music without Native American music. The scores on the American Indian Belief Inventory (AIBI) show that all four groups which included Native American music instruction could **decrease the students' stereotypical attitudes** and obtain **more cultural awareness and sensitivity** toward a minority culture. The control group did not show any improvement.

Figure 2: North American Indian Music Instruction
American Indian Belief Inventory Means Pretest and Posttest Scores



Edwards, K.L. (1994). *North American Indian Music Instruction : Influences upon attitudes, cultural perceptions, and achievement*. (D.M.A. dissertation). Arizona State University, Tempe, Arizona. Cited by Morrison Institute for Public Policy/National Endowment for the Arts (1995, June). *School, communities, and the Arts: A research compendium*. <<http://www.asu.edu/copp/morrison/public/school.pdf>>

Moreover, the multicultural curriculum at the Aracy Barreto Sacchis Primary School in Santa Maria, Brazil, was implemented for students from eleven to fourteen years old from different backgrounds such as Brazilian-European, Brazilian-black and Brazilian-Indian cultures. In two chosen fifth grade classes, students watched *visual materials* that show aesthetic work by five skilful women. The evaluation by constant observation, diaries, photography, video, sound recordings, and interviews

with the students revealed not only that the students **learned their own culture** and discussed **cultural difference**, but also that **the role of women** at home and in society was in general valorised. The report by the Department for Education and Skills in the United Kingdom on the inspection of primary, secondary and tertiary schools and colleges in Pretoria and Johannesburg in South Africa was designed to seek the possibility of using ICT to develop students' creativity. This report mentions that the inspection team visiting South Africa encountered "powerful evidence of the part the arts played in **building communities** and **maintaining cultural pride** (for example, the competition for choirs.) At a laboratory school in Turkey, students from fifteen to eighteen years old participate in a project to learn the tradition of Turkish miniature painting that includes various themes from daily life. Through participation in this project twice a week for one academic year, students learn **the historical background** of miniature painting and absorb a sense of design derived from Islamic geometric patterns. In Australia, a project, "Between Two Shores", organised by Shopfront Theatre targeting the Pacific Islander and Maori Community in Sydney, tried to encourage theatre performance with sixty students in a high school for Pacific islanders. First, students were divided into their original cultural groups, Fijians, Tongans, Samoans, New Zealand Maori, Cook Island Maori, and taught traditional songs in cooperation with elders coming from each culture. Finally, they put on a performance by incorporating plays, songs and dances from the five different Pacific cultures. Through this activity, students improved their **sense of identity based on their traditional cultures**.

Cognitive Development

Among various cognitive competencies, one of the most notable skills supported by much research is the area of spatial reasoning. By using meta-analysis on 188 reports (275 effect sizes) related to the relationship between arts and academic areas, the Harvard Project Zero Reviewing Education and the Arts Project (REAP) concludes that there is significant correlation in the following three areas; *listening to music* and **spatial-temporal reasoning**; learning to *play music* and **spatial reasoning**; and classroom *drama* and **verbal skills**. Even though the project also analysed seven other categories; arts-rich education and verbal and mathematics scores/grades; arts-rich education and creative thinking; learning to play music and mathematics; learning to play music and reading; visual arts and reading; dance and reading; dance and non-verbal reasoning, it could not find any reliable causality. The concept developed by a former concert cellist, Shaw, and a researcher on cognitive development, Raucher, the "Mozart Effect," was distilled at the University of California, Irvine, the United States in 1993 by studying the effects of the *Mozart Sonata* on college students. Shaw and Raucher found that students who listened to the first ten minutes of the Mozart Sonata for Two Pianos in D Major, acquired a **temporary enhancement of spatial-temporal reasoning** on the Stanford-Binet IQ test. According to research conducted by Rauscher

and Show, the intelligence of three-year old pre-schoolers who took ten to fifteen minute private *piano* lessons weekly and thirty minute group *singing* lessons daily were measured. The results showed that children with lessons scored 80% higher in **spatial intelligence** (puzzle assemble) than those who did not. Moreover, the following study conducted by Rauscher and Shaw in 1997 again showed that *piano* and *singing* instruction provide children better **abstract reasoning skills** than computer instruction. They organised two experimental groups of pre-schoolers: one for private piano/keyboard lessons and singing lessons; the other took private computer lessons as a control group. Those children who received piano/keyboard training recorded 34% higher scores on **spatial- temporal** ability than the others. The research of a three-year “Arts in Education” project in five elementary schools in Tacoma, Washington also revealed that learning basic academic skills through *music* contributed to the enhancement of children’s **perceptual skills**.

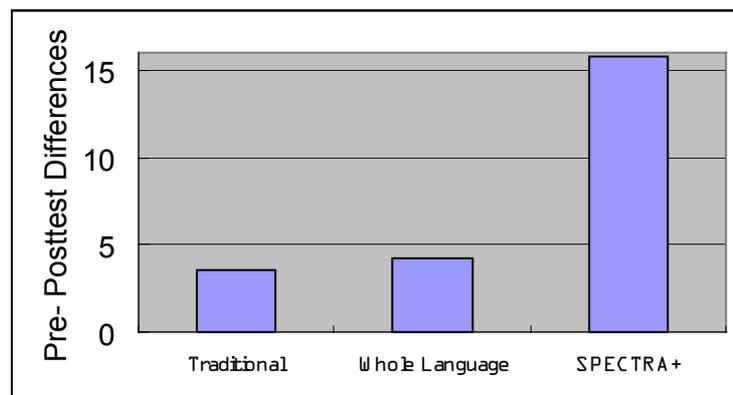
In addition to spatial ability, many researchers are interested in the relationship between arts activities and the development of **verbal skills**, and some of them present interesting results. Using sixty female college students in the United States, Chan, et al tested the relationship between their verbal memory and their *music* training experience before age twelve. The students with music training experience showed significantly higher recall. Stein, Hardy, & Totten from North Texas University in the United States also examined the **vocabulary memory** of two experimental groups of college students. While one listened to Handel's *Water Music* during a review of twenty-five vocabulary words, the other did not. The result shows that the former scored significantly higher than the latter.

Furthermore, from the comprehensive viewpoint of cognition, the Norwegian Research Council for Science and the Humanities found a positive correlation between students who have *musical* interests and competence, and their **cognitive competence** scores. According to a meta-analysis conducted by the American Psychological Association, listening to *music* resulting in progressive relaxation brings positive effects on **cognitive academic variables** for elementary school children. A study by Malyarenko, et al. also showed that a group of four-year-old listeners to classical *music* for one hour a day demonstrate “greater **brain coherence** and **more time spent in the alpha state**.” Another American study by the University of Florida College of Medicine on *music* activities also reveals that premature babies receiving special care with classical music achieved significantly **higher mental and physical development** than those who did not.

In terms of the development of creativity, several studies reveal the positive relationship with arts education. For example, a study conducted in the United States shows that *dance* activities brought positive effects on **creativity** of children with disabilities. Seventeen children from 3 to

5years old with delayed language were offered a *dance* programme and a physical education programme for twelve weeks. The results on Torrance’s Thinking Creatively in Action and Movement test (TCAM)⁸ showed that participants in a dance programme marked significantly higher scores in the area of **fluency**, **originality** and **imagination** than those in the physical education programme. Other research also presents evidence that gifted students in the first and third grades improved their scores on tests of **intelligence and creativity** after participating in a *fine arts* programme. Moreover, Mohanty and Hejmadi reveal that *kinesthetic activities* can help **creativity**. After twenty days of instruction of four groups: non-training control; verbal instruction by using body parts; verbal instruction with acting out movements; and music/dance instruction given by song and acting out movements, the *music* and *dance* group received the highest scores according to the Torrance Test of Creative Thinking.⁹ The results of the “SPECTRA+ Program,” a four-year model of an arts education initiative also shows that SPECTRA+ students acquired higher scores for **creative thinking** than other groups in the Torrance Tests of Creative Thinking.

Figure 3: SPECTRA+ Program, Torrance Tests of Creative Thinking
Difference in Percentiles for Total Creative Thinking Scores



Luftig, R.L. (1994). *The schooled mind: Do the arts make a difference? An empirical evaluation of the Hamilton Fairfield SPECTRA+ Program, 1992-93*, Center for Human Development, Learning, and Teaching, Miami University, Oxford, Ohio. Cited by Morrison Institute for Public Policy/National Endowment for the Arts (1995, June). *School, communities, and the Arts: A research compendium*. <<http://www.asu.edu/copp/morrison/public/school.pdf>>

Academic Achievement

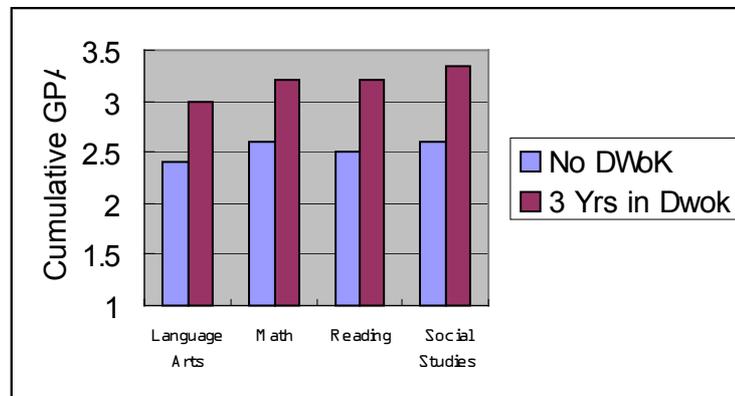
The analysis of data by AAAE concluded: “when the arts are connected in meaningful ways with other subject areas, students comprehend and retain more about the subjects involved.” Research by Marshall and Olanoff & Kirschner also show that *music* lessons bring not only

⁸ The test “assesses the creativity of three to eight year old children with limited verbal and drawing skills.” (M.D.Angus & Associates Limited)

⁹ The test “assesses fluency, flexibility, originality and elaboration by asking the examinee (kindergarten – adult) to produce as many different solutions

motivation and interest in music but also in other academic subject by enhancing **academic attitude** and **aspiration**. Considering these beneficial domains in more detail, data is presented from a linguistic viewpoint. Results of the above-mentioned “Different Ways of Knowing” programme reveal that one-year programme participants gained 8 percentile points on standardised achievement tests in **language arts** and two-year participants gained 16 percentile points, although non-participants did not show any percentile gains. Moreover, three-year participants had significantly higher report card grades in the field of **language arts, math, reading, and social studies**.

Figure 4: Different Ways of Knowing
Comparison of Report Card Grades



Catterall, J.S. (1995, February). *Different Way of Knowing: 1991-94 National longitudinal study final report*. The Galef Institute of Los Angeles, Los Angeles. Cited by Morrison Institute for Public Policy/National Endowment for the Arts (1995, June). *School, communities, and the Arts: A research compendium*. <<http://www.asu.edu/copp/morrison/public/school.pdf>>

By designing a language arts model entitled SAMPLE, (Suggested Activities of *Music* and *Poetry* for Language Enrichment,) Hudspeth compared two groups composed of sixteen “low achiever” fourth- graders in the United States. Although these two groups used the same language arts text, the SAMPLE program included other musical and kinesthetic activities such as choral reading, singing, or rhyming in addition to the text. By using both pre- and post-test results of the California Achievement Test¹⁰, she concluded that the SAMPLE students achieved significantly higher scores in the area of **language mechanics, language expression, total language, and reference skills**. *Drama* activities also could provide children with increased **facility in English as a second language**. By comparing a drama group with a traditional lesson group, Vitz concluded that the drama group showed significantly higher improvement of verbal English. Moreover, researchers in

as he/she can in response to a presented problem.” (M.D.Angus & Associates Limited

¹⁰ The test provides “comprehensive selected-response achievement tests with complementary constructed-response assessments.” (CTB/McGraw-Hill)

a study of Dolch Sight Words¹¹ divided kindergarten children into two. Even though teachers in both groups provided them the same lesson content, the teacher of Group A *sang* the words, but the Group B teacher did not. As a result, students of Group A **learned more words** than those of Group B. The “Arts Alternative Program” implemented in New Jersey by offering *role-playing* and *story-writing* activities to fourth, fifth and sixth grade students obtained results showing significantly improved **vocabulary** and **reading comprehension** on the Comprehensive Test of Basic Skills (CTBS).

In addition to linguistic ability, reading skill is one of the domains to which arts activities can contribute. An educational research firm, CEMREL, Inc. researched sixty-seven specific studies in California in 1980, and concluded that student achievement in **reading, writing** and **mathematics** was enhanced when arts were included in the curriculum. Another research also revealed the relationship between *band and orchestra activities* and scores in **reading, language** and **mathematics**. Although tested high school students did not have significant differences in terms of ethnicity and economic status, students participating in instrumental activities demonstrated higher academic achievement. Moreover, research conducted from 1993 to 1995 in Kentucky, the United States, following the implementation of the “Different Ways of Knowing” programme revealed that fourth grade students in twenty-four elementary schools attained 7% gains in **reading, art**, and **humanities**, 10% in **social studies**, 25% in **mathematics**, and 7% in science, according to Kentucky Instructional Results Information. Through research of three groups of seventeen fifth-graders, each participating in a remedial reading programme, DuPont illustrated that a six-week *creative drama* programme in the United States improved their **reading comprehension**. In this programme, while the first group went through creative drama activities by silently and orally reading non-illustrated children’s literature and by dramatising it, the second group followed reading activities with vocabulary and discussion classes. According to post-test results on a reading comprehension test¹², although the mean score of Group One significantly improved, that of Group Two significantly decreased. The Group Three (traditional classes) did not show any difference. A programme in Seattle, the United States, taught language arts concepts to elementary school students in grade three through *dance* activities. Although Metropolitan Achievement Test **reading scores** in the district decreased on average 2%, the students involved in the dance programme increased their scores by 13% in six months. According to Palmer, eye-hand coordination tasks to stimulate the neural coordination such as spinning, leaping, crawling, rolling, rocking, pointing, and marching in *playtime* and *dance activities* also significantly strengthened **reading ability**. Furthermore,

¹¹ “From 50 to 75% of all words used in school books, library books, newspapers, and magazines are in the Dolch Basic Sight Vocabulary of 220 words. They are “service words” (pronouns, adjectives, adverbs, prepositions, conjunctions, and verbs) which cannot be learned through the use of pictures. Because they are used to hold thoughts together, these words must be recognized at a glance before a child can read with confidence (Gemini Elementary School, 1998).”

¹² Metropolitan Reading Comprehension Test of the Reading Diagnostic Test (MAT6)

evaluation of the “Learning to Read Through the Arts (LTRTA) “ programme conducted constantly since the 1970s in the United States claims that the programme has contributed to improve participants’ academic achievement, especially **reading performance**. The LTRTA was designed to introduce *visual and performing arts* into other subjects with a visual, aural, tactile and kinesthetic learning approach, and was provided for Title I¹³ eligible students in eight inner-city elementary schools in New York. The most recent study in 1992-93, by multiple data sources (interviews, observations, student and teacher surveys, standardised test scores, and a holistic writing sample) shows that elementary school students from grade four to grade six gained more **reading achievement** at post-test in normal curve equivalents¹⁴ (Although Grade 3 did not).

Moreover, several researchers have shown the impact of arts education on the writing skills of children. The above-mentioned LTRTA programme pointed out that elementary school students in grades two to six also recorded better scores in **writing skills** at a holistically-scored post-programme. According to the study conducted by Li, primary school students in Hong Kong could enhance their Chinese **writing ability** through arts activities. The results, using randomly-chosen control and experimental groups, show that “talking about art work in art appreciation activities” improves children’s Chinese writing ability. The above-mentioned “Humanitas Program” offering an interdisciplinary arts based education to eleventh grade students, reported that Humanitas students attained **higher-quality writing, more conceptual understanding of history, and more positive effects on their academic achievement** than non-Humanitas students. The research on the effects of *drawing, drama,* and discussion on **narrative writing skills** reported that there was significant difference between drama/drawing groups and the control group. The researchers randomly divided two second- and third-grade classes in a rural Rocky Mountain region into a drama group, a drawing group, and a discussion group, and evaluated the students’ writing on the Narrative Rating Scale. The authors comment that “as they involve creative products in themselves, drama and drawing allow the writer to test out, evaluate, revise, and integrate ideas before writing begins.”

Several studies also show the contribution of arts education on children’s mathematics achievement and test scores. For example, a study conducted with two hundred and thirty seven second grade children illustrated that piano lessons contributed to raise the spatial awareness and the ability to think ahead, developing mathematics ability. According to their research, the group taking piano lessons had 15% **higher mathematics scores** than the other group playing a math video game

¹³ Refer to the footnote on page 4

¹⁴ “NCEs provide an indication of student progress in relation to a national norm group. A gain in NCE means that students improved their standing in relation to the group on which the test was normed. If students show no NCE gain, it means they have remained in the same relative position from test to test (Office of Educational Research).”

that had already obtained 36% higher results than the control group. Furthermore, an ESAE¹⁵ Title I programme revealed the relationship between *keyboard lessons* and mathematics and history scores by using two groups. Even though the participants of the experimental group marked lower IQ scores than the control group, they obtained higher post-test scores in **mathematics** and **history**. According to a study at Mission Viejo High School in California, high school students with *music* experience reported **higher GPA** (grade point average) than non-musicians in the same school. The Texas Music Educators Association found that students chosen to participate in the All-State music performing groups scored two hundred points higher than the national Scholastic Assessment Test (SAT) average in 1989, and two hundred and eleven points higher in 1996. Furthermore, according to the College Entrance Examination Board, scores of the SAT for students who had studied the arts more than four years were 59 points higher on the verbal section and forty four points higher on the mathematics section than students without arts experience.

Various quantitative and qualitative data show that arts education can enhance extensive development of children such as aesthetic, socio-emotional, socio-cultural, cognitive skill, and academic development. Arts education offers the tools to approach the arts; joyful experiences that cultivate a positive attitude toward themselves and others; encounters that stir the affinity for other cultures; experimental learning through trial and error and greater success in other academic fields. Although the importance of arts education is gaining increased recognition, it is also true that arts education is continually struggling to establish a secure status in formal curricula, especially in developing countries. In order to achieve the possibilities that arts education promises, it is indispensable to incorporate arts education with well-designed programme plans and skilful teachers into curricula.

¹⁵ the Elementary and Secondary Education Act

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