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THE CLASSROOM IN ANCIENT TIMES

by

K. Dale Foster

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for the degree of Doctor of Philosophy

at

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Abstract

Most writers of histories of schools begin with the Greek educational system perhaps because the Western perspective of most English language historians makes the Greek civilization a convenient starting point This study shows that the classroom preceded the Greek civilization by thousands of years, ancient Sumerians constructed classrooms in which to instruct their young as early as 3000 BCE

In each of three ancient civilizations - the Sumerian, Egyptian and Greek - the fundamental aspects of classrooms are examined These aspects include the physical characteristics of the classroom, the curriculum, the textbooks, the teachers and the methods they used, and the students and the way they spent their day at school It might be expected that changes in communications devices used within classrooms, such as papyrus, clay, and, in our own time, computers, would change the fundamental characteristics of classroom life However, this study finds little evidence for change in the fundamental aspects of classroom activities, and it is contended that the physical characteristics of ancient classrooms are in some important respects similar to modern day classrooms in Western societies, the school day appears to have changed very little and methods of instruction used today have forerunners in the classrooms of ancient Sumer, Egypt and Greece

It is suggested that the underlying basis for this absence of change is that the purpose of the classroom has remained the same from its earliest days, the classroom has been the place where teachers have been expected by each society to pass down the defining characteristics of that society to its young It is suggested that in each society, teachers have concentrated on their own pedantics, and used pedantry to control their students This study shows that the purpose of the classroom from the earliest times has been to control the young, and pedantry has been the principal means of doing so

The hierarchical system of human interaction between students and their teachers seems to have been at the core of what has gone on inside classrooms in every age.

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Chapter 1: Introduction

There is quite an extensive body of literature on the history of schools. What is missing from these histories is a description of the first classrooms. Most histories of schools and education begin with the relatively modern schools of the Greeks. Very seldom is there a discussion of the first classrooms, those of the ancient civilization of Sumer. The schools of the civilization which followed the Sumerian civilization, the Egyptian, are sometimes mentioned. but not to an extent to satisfy the curiosity of those who want to understand what went on inside the classrooms of the past and to use this understanding to gain insight into what goes on inside present day classrooms. These chapters describe the first classrooms, those of the Sumerians and the Egyptians, and also present a summary of the contributions of the Greeks in order to tie the early history of the Sumerians and Egyptian schools to the history of Western schools.

I am not a trained historian, but a teacher. This study was sparked by an interest in what went on inside the contemporary classroom, especially when it came to the communication devices used. It seemed that one way to understand the interactions that went on inside a classroom today was to look at the first classrooms. How had technological advances affected what went on inside the school? What parts of the classroom experience were least affected? If one could look inside the first classroom, what would one find? If we knew how the classroom changed throughout history as new communications devices were used, this information might be useful in determining the effects of using telecommunication devices and computers in the schools today.

One would expect there to have been dramatic changes in what went on inside the classroom as new communications media were invented and introduced. Within the last twenty years, predictions have been made that classrooms would be superseded as each child acquired her own electronic device and linked up to elaborate communications networks (Brand, 1974). Pictures of children using notebook styled computers, called *Dynabooks*, existed as early as 1974 (Brand, 1974, p. 69). This was before computers were widely used in areas such as industry and business which have subsequently undergone extraordinary changes because of the use of computers. The case of factories will be used to illustrate this point shortly. Widespread, high speed computer communications networks were viewed as alternatives to traditional classrooms during the early days of computer development. Students with their computers were seen to be part of the "global village" (McLuhan, 1966) that high speed transmission of information by computers and electronics would permit.

One of those who expected computers to provide educational alternatives was Seymour Papert. Influenced by the experiential learning theories of Jean Paiget, Papert was a leader in the development of a programming language called LOGO during the late 1960s. He designed LOGO to allow students to participate in mathematics rather than being taught the subject by a teacher. He believed that geometry would become a more concrete subject because the child could think of the turtle's movements in terms of her own body movements (Papert, 1980). Students issued commands in LOGO that controlled the movements of a device called a turtle. In its original form the turtle was a bubble-shaped device that moved on the floor making patterns as the student instructed. Later the turtle became a blip on the

computer screen (Savage, 1986, p. 290-291; Mandell, 1992, p. 321-322). Papert believed that the computer along with programs like LOGO would make Ivan Illich's (1971) predictions of a deschooled society a reality (Papert, 1979, p. 85).

But, much to the surprise of those who predicted a demise of the traditional classroom, it still exists. It is not only still here, but, as I hope to show in this thesis, the classroom exists in much the same form as it did before the introduction of computers and indeed, in much the same form as it did before the use of papyrus or paper. I will attempt to show that the classroom and what happens inside it have persisted despite shifts in the communications media, and that the classroom is perhaps the most persistent of all human institutions. The question is: What makes the classroom so resistant to change? What human need is there that keeps the classroom the same?

Other institutions within society have changed in response to the development of technology. Although other examples could have been chosen[1], factories provide a good example of changes to an institution when technology changes. Not only did factories change when technology was introduced, but changes in the factories sparked changes in other areas of society, such as economics, leisure and the organization of labour.

Although there have always been systems of production, factories as most people think of them are a result of technology developed during the industrial

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[1]The series *Technology in Western Civilization* (1967) is a compilation of essays which discuss the influences of technology on institutions within society, and the implications for society. The five-volume encyclopedia, *The History of Technology*, edited by Charles Singer (1954-1958), provides a comprehensive history of technology and its effects. Lewis Mumford's 1934 work, *Technics and Civilization*, looks at the relation of technology to broad aspects of human culture. Heilbroner (1967) studied the effect of technology in determining the nature of the socioeconomic order.

revolution in the 1700s. Although the Egyptian pyramids, the Great Wall of China, the Greek Parthenon and the aqueducts and roads of the Roman Empire attest to the ingenuity and industry of citizens of these empires, the ways these ancient peoples produced products were quite different from what would normally be described as a factory. In later times, up until the 1700s, most production systems were cottage systems; production took place in homes or cottages where craftspeople and apprentices produced products, relying more on hand work than machines.

It was the technology developed during the industrial revolution in England that moved production into centralized factories. One of the principal elements of the industrial revolution and the establishment of the factory system was the substitution of machine power for human power. The steam engine, invented by James Watt in 1764, not only provided machine power for factories but also stimulated other inventors to devise methods of applying steam power to the production of products (Gaither, 1990, p. 5). Machine power and tools became centralized in factories and workers were required to congregate in factories to use the machines. This led to a need for organizing the large number of people; in 1776, Adam Smith published *The Wealth of Nations* in which he touted the economic benefits of division and specialization of labour.

The United States and other European countries soon followed England in adopting the factory system. By the mid 1800s, the factory had generally replaced cottage industries. Railways were built and people flocked to the cities for work and by 1900, there had occurred what has been described as a "production explosion" (Gaither, 1990, p. 6). The culmination of these developments was realized in the development of the assembly line by Henry Ford, which was first used to manufacture

the Model T. Ford's assembly line employed the latest technology of the period, such as standardized design and interchangeable parts, which allowed for mass production. Workers were responsible for one aspect of the production of the Model T, perhaps a task such as installing a gear or attaching a wheel. Jobs became highly specialized among workers on the assembly line.

Factories were later affected by the introduction of computers. One of the first computers to be installed in a factory, or in any commercial operation, was at the General Electric Appliance Park in Kentucky in 1954 (Gaither, 1990, p. 11). The impact of computerization on factories in the last thirty years has been dramatic. The assembly line, for instance, has been replaced by flexible manufacturing systems controlled by computers (Kusiak, 1985, p. 1057). The plant floor of the 1990s factory is characterized by complete automation, controlled by computers rather than human workers. Automated Guided Vehicles (AGVs) connect machines that can be accessed in any order to produce final products with different specifications. Robots are often used for such tasks as assembly, painting, testing, and retrieving parts from bins. In companies such as Fujitsu Fanuc, a leader in developing automated factories, robots are used to build other robots. Pictures of the present day factory floor of Fujitsu Fanuc Company, shown in Figure 1-1, differ from those of the assembly line of the 1930s, shown in Figure 1-2.

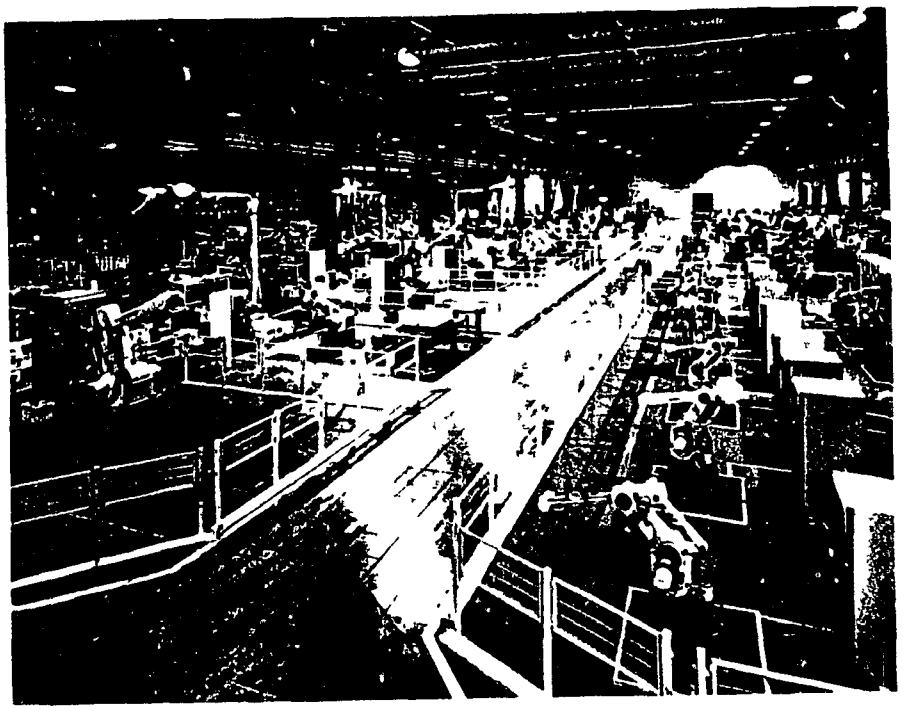

Figure 1-1
Fujitsu Fanuc factory floor (Chase and Aquilano, 1992, p. 104)

Figure 1-2
Nabisco plant in the 1930s (Chase and Aquilano, 1992, p. 360)

Computer assisted design (CAD) systems are now integrated into the manufacturing process so that an engineer can transmit changes in design specifications from a computer in her office to the computer on the plant floor and modifications are made almost immediately. Engineers use specially designed computers, often equipped with a light pen that can draw on the computer screen or an electronic pad. Some CAD systems allow on-screen testing which can replace costly prototyping (Chase and Aquilano, 1992, p. 73). CAD systems are used in designing airplanes as well as such things as potato chips, as was the case when a CAD system was instrumental in the design a new type of potato chip for Frito-Lay. The computer was able to determine the proper number and angle of ruffles to minimize crushing in the bag and overcooking (Chase and Aquilano, 1992, p. 73). Companies such as Texas Instrument control their entire manufacturing process by computers with minimal human interaction (Chase and Aquilano, 1992, p. 103).

Service industries have incorporated some of the technology that was first used in factories. Perhaps one of the most familiar examples is McDonald's where the delivery of fast food resembles a manufacturing process, most like an assembly line, rather than what was traditionally considered a restaurant (Levitt, 1972, p. 41).

Technology has dramatically changed the way factories operate. From the cottage industries before the industrial revolution to the factories and assembly lines, to the completely automated factories of today, there have been major changes. However, as will be shown in this thesis, there is little difficulty in recognizing a classroom from any time in history, even from 5000 years ago.

An institution which has not changed as dramatically as the factory is the prison. Ancient prisons of the Greek and Romans were used as places of temporary

confinement for prisoners as they awaited their punishment, which was often execution (Sellin, p. 6). Since the tenth century, prison confinement has been used as a form of punishment and not as a temporary measure (Sellin, 1931, p. 1). Penitentiaries, designed for the long term incarceration of serious offenders, were established in England by way of a 1779 law (Sellin, 1931, p. 3).

Prison life remains much the same as it did centuries ago; Cass says certain characteristics are similar in prisons throughout history:

> the prisoner moves in obedience to innumerable rules which leave him no chance for initiative or judgment. The treatment is *en masse*, not individual. Wardens and guards are usually more interested in ease of administration than in giving attention to the individual needs of offenders. (Cass, 1931, p. 8).

Administration of prisons has consistently remained under centralized control (McLachlan, 1974, p. 6-7). The architecture of prisons has changed little since prisons were first built (Davison, 1931, p. 38-39); architectural priorities have always been to prevent the unnecessary movement of prisoners, security and the prevention of riots (Davison, 1931, p. 38-39). Thomas Murton has said that there have been few new directions in prisons since their earliest days, and any changes are for the most part cosmetic (Murton, 1979, p. 18). He notes that designers tried to incorporate "some imaginative and innovative architecture which tried quite valiantly to make less obvious the fact of confinement" but although some of the institutions were "new and shiny . . . it was as if nothing had changed" (Murton, 1979, p. 18). Despite minor changes to the façades of these buildings, which in many cases were temporary experiments as the prison reverted to its previous form, there remained first and foremost "the old

preoccupation with control" (Murton, 1979, p. 18). Studies of prisons in other countries present similar findings (Wolfgang, 1979). In Russia, Peter Kropotkin had made a study of the prison system there some years before he was arrested and incarcerated in 1874. In the introduction to his book, published in 1906 after his escape, he remarked that although money had been spent in reforming the prison system, it had done nothing but "whitewash old bricks" and nothing had really changed (Kropotkin, 1906, p. xxiv).

It would seem that changes to prisons have been superficial. For example, those people involved in prison reform have disputed much the same things in the 1980s as they did in the 1780s and the 1830s (Forsythe, 1991, p. 245). I hope to show that this is also the case with the classroom. There have been attempts to change the classroom and what goes on inside it, but these were temporary experiments for the majority of classrooms. For example, during the late 1960s and early 1970s there was a move in North America to organize classroom space and time differently than had been done previously. However, within a decade or so, most[2] classrooms reverted to the traditional model. This suggests a resistance to any permanent change in the structure and operations of the classroom.

The changes in Canadian classrooms during the late 1960s and early 1970s were precipitated by a report prepared for the government of Ontario, Canada by the Provincial Committee on Aims and Objectives of Education in the Schools of Ontario in 1968. The report was published with the title *Living and Learning* and was also known as the Hall-Dennis report after the co-chairs of the committee, Mr. Justice E.M.

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[2]Although there are exceptions to the traditional form of the classroom, the majority of classrooms would seem to fit the model described in this thesis. Alternate forms will no doubt always exist, but I suggest that they will always be the exception.

Hall and Mr. L.A. Dennis. The report proposed radical changes in classroom structure, curriculum content and teaching methods to emphasize the individuality of the student and his needs (Hall and Dennis, 1968). One suggestion was that curriculum should prepare children to cope with the accelerated rate of social change expected in the late twentieth and early twenty-first centuries and for increased leisure time and a more mature culture (Hall and Dennis, 1968, p. 13).

> The changing pattern of living, of working, and of recreation require that the educational system prepare the children of tomorrow to live in a world vastly different from that of this generation. (Hall and Dennis, 1968, p. 13).

The report suggested that curriculum content should be organized around three broad themes - communications, humanities and environmental studies - and students would make their own choices of which courses to take and have an active voice in curriculum planning (Hall and Dennis, 1968, p. 75). The school would provide "learning experiences to meet the needs of individuals, young people at every level (Hall and Dennis, 1968, p. 75). Because these learning experiences could occur anywhere, in "unusual and unconventional places" (Hall and Dennis, 1968, p. 54), the report suggested learning should not be confined to the classroom. Areas outside the classroom should be used as learning centres (Hall and Dennis, 1968, p. 88-89) and teachers were encouraged to take students outside the classroom where "unspoiled natural settings" like grassy areas and trees (which the report encouraged be incorporated into school design) would provide learning experiences (Hall and Dennis, 1968, p. 89, 88). The classrooms should have flexible space with moveable walls and should provide opportunities for discovery learning by being equipped with such

unconventional things as art supplies, musical instruments, and magazines all stored in moveable cupboards (Hall and Dennis, 1968, p. 124; see Figure 1-3) The report suggested that rooms should be designed for the use of technology, that screens and drapes darken the rooms to allow for the use of projection equipment, and that tape recorders and record players could also be incorporated into the classroom (Hall and Dennis, 1968, p. 89). Room design incorporated soundproofing and the ability to darken the room for audiovisual presentations. The picture below shows one of the model classrooms presented in the report.

Figure 1-3
A classroom as proposed by the Hall-Dennis Report (Hall and Dennis, 1968, p. 125)

The move towards a new form of the classroom was reflected in many of the books and materials published during the early 1970s. Robertson (1974) encouraged teachers to move out of the classroom where nature could provide the materials for experiential learning (Robertson, 1974). One of Tobey's (1970) suggestions was that the teacher burn incense while talking about temples and tabernacles, and Sava (1975) suggested that cooking could be an activity where students would learn arithmetic and reading by following recipes. Morine and Morine (1974) provided teachers with a manual of "discovery lessons" that they could use with their students.

The Hall-Dennis report's recommendations were incorporated in many of the classrooms built in response to such demands for discovery learning environments and flexible learning space. A number of schools in Ontario and elsewhere, especially elementary schools, were built with hexagonal-shaped classrooms with moveable partitions, carpeted floors and large open areas with learning centres rather than fixed rows of desks as had been the common structure (Stamp, 1982, p. 219). There were experiments in team teaching and independent study, more elective subjects, and semester programming (Stamp, 1982, p. 220-221). A new system, called the 'Davis System', was formally announced in March 1969 by the Minister of Education, William Davis. "The philosophy of the 'Davis System' owed much to the Hall-Dennis Report"; education would progress "along a continuum with the choice of experiences and the rate of progress depending on student needs, interests, and rate of maturation" (Stamp, 1982, p. 222). Schools developed along these plans and were considered the "most advanced high schools in Ontario" (Stamp, 1982, p. 223). The Thornlea Secondary School which served a suburban area of Toronto, was singled out as the archetypal high school of the late 1960s and the early 1970s (Stamp, 1982, p. 222).

> Thornlea was an open-plan, highly flexible school, run on individual timetabling and a trimester system, and featuring all manner of interdisciplinary, work-study, and independent-learning courses. There was certainly more activity at Thornlea than in most schools: drawings and paintings covering walls, all kinds of music filling the air, seminars and panel discussions held in abundance. There was a sunken student lounge area of brick, carpets, padded benches, and large plants, which the students called the 'jungle.' At any time of the day, students could be seen there studying, playing cards, strumming guitars, or chatting. Highly motivated students dug into their work, while others skipped classes with abandon. (Stamp, 1982, p. 223)

But, the move towards a liberalized and decentralized school system did not last long. Within a decade "the educational pendulum swung rapidly from one end of the ideological continuum to the other . . . back to the stronger central control" that characterized the system before the Hall-Dennis report (Stamp, 1982, p. 225).

The move back to the traditional classroom was sparked by complaints about the open classroom concept from teachers and parents. "Many elementary teachers felt uncomfortable with the pressures arising from the implementation of the Hall-Dennis report" (Stamp, 1982, p. 241). Teachers found pupil achievement difficult to measure without a system of exams; the provincial system of common departmental exams had been discontinued based upon the belief contained in the Hall-Dennis report that a child should not fail (Hall and Dennis, 1968, p. 62). Teachers complained of confusion and noise within the classroom; in these new classrooms, students were encouraged to talk amongst themselves, question the teacher and move freely (Hall and Dennis, 1968, p. 57). A study published in 1976 reported that teacher morale was at an all time low and the root cause was seen to lie in the Hall-Dennis report which had spawned the "happy school of the 1970s" (Stamp, 1982, p. 247).

There was a perception that student illiteracy was increasing due to these new classrooms and programs, and parents complained. "Bitching about education has become a staple of cocktail-and-dinner-party conversation," declared Maclean's Magazine in its annual back-to-school story (cited in Stamp, 1982, p. 247). Students also complained that the programs did not meet their needs, and in fact students "seemed less satisfied than ever" (Stamp, 1982, p. 248). In October 1976, the Ontario government announced that students would once again be required to study a core curriculum of English, mathematics, science and history or geography in grades 9 and 10. "Eventually the ministry would produce new guidelines dictating a core content in every subject at every grade level, with the exception of some high school courses" (Stamp, 1968, p. 247).

Most of the classrooms built in response to the Hall-Dennis report were soon converted into the traditional classroom form; mobile walls were put back in place, the seats were put back into rows, students moved off the floors and came in from the gardens to sit in the seats, the curriculum became more rigid, and teachers moved back to the front of the room. The same was true in other countries; in Britain, the William Tyndale School, which had been set up and run by deschoolers, was also closed down in the early 1980s (Barrow, 1981, p. 85).

Institutions within society, such as factories as discussed above, have changed in response to new technologies. However, the following chapters will show that classrooms, like prisons, have remained essentially unchanged. As the example of the Ontario schools in the 1960s and early 1970s has shown, any changes brought about were resisted and the classroom reverted to its traditional form.

It seemed to me that it would be important to discover the form of the classroom from its earliest days. A search was made of published material on the history of educational systems and the history of schools. The catalogues of Canadian and American university libraries were used to provide a listing of materials that were categorized under the subject headings of ancient education or history of education. In addition, browsing of shelves turned up other material that was not classified as educational history but gave some information about early schools. I read avidly about the early civilizations of Sumer and Egypt, as well as the Greeks, and studied extant documents and the literature of these civilizations. Although information was available about the Sumerians and early Egyptians, there had been little attempt to integrate this material into a comprehensive history of the classroom.

Most writers of histories of schools begin with the Greek system of education[3]. The belief that many aspects of Western civilization including schools had their roots in Greek civilization seems to have presented these authors with a convenient time period to begin their studies rather than beginning with the first schools. Beginning with the Greek civilization seems to reflect a Western perspective. There is a large amount of available material dating from the time of the Greeks. The writings of famous Greek teachers and philosophers such as Plato and Aristotle provide historians with a great deal of information about the schools of Greece. Although these writings do not always describe the actual Greek schools, they present a picture of what the ideal characteristics of the school should be, according to the writers. In

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[3]The organization and methodology used during the time of the Greeks may not have appeared at the time to constitute an educational "system." However, it will be shown that there was a clear notion of what should be the inputs, outputs and processes associated with the classroom, especially in the case of providing instruction to the *children* of both Sparta and Athens.

the *Republic* for instance, Plato outlines the curriculum for the secondary school as well as how it should be delivered. Although Plato's ideas were never fully implemented into the Greek schooling system, the *Republic* presents the reader with some of the educational thinking of the period. Analysis of Plato's work alone gives the historian of the Greek educational system groundwork for her study. There are other Greek authors who wrote specifically about their ideals of education. Although his work is unfinished, Aristotle outlines his ideas of the usefulness of education in Book VIII of *The Politics* and goes on to outline what he believes are the four things that should be taught to children: reading and writing, physical training, music and sometimes drawing. In addition to those works which deal specifically with education and schools, the literature of the Greeks provide the historian with additional information about the educational systems of the period. Aristophanes's *Clouds*, first produced in 423 BCE, compares a rustic style of life with that of the intellectual. In the play, Socrates is presented as a typical Sophist. From works like this, one can learn not only of the schools of the period but also what was thought of these teachers and their methods. Pictures preserved on Greek pottery provide the historian with more information about the Greek schools; there are many pictures which show the classroom, the teacher and the students.

Therefore it is not surprising that many histories of schools begin with the Greeks. It is not only the Western perspective that credits the Greeks with the beginning of much of what is considered worthwhile in Western civilization that makes a study of Greek schools relevant to the modern historian, but also the relative wealth of material left behind by the Greeks that makes a study of their schools all that much easier than a study of the classrooms of earlier civilizations.

There is another group of histories that are best described as histories of modern educational systems. Some authors choose to look at the history of schools in a particular geographical area, beginning in a relatively modern time period. Histories of schools in the United States, for example, for the most part begin with the influence of European settlers. Likewise, histories of schools in Canada and individual Canadian provinces often begin at the time of confederation. Although not quite in the same category, certain authors choose to focus not on a particular geographical area, but on a specific culture or religion. Histories of Jewish and Christian educational systems generally begin in relatively modern times.

Although the majority of histories penned in English are written from a Western point of view, there are a few works available in the English language that attempt to trace the history of schools in Eastern civilizations. However, the histories of Japanese, Chinese and Islamic schools also fall short of tracing the similarities those schools to the first schools of Sumer and Egypt. A comparative study of Eastern and Western educational systems would be valuable, and the present work is in part an effort to pave the way for such a study by uncovering the common elements of these two systems. Similarities and differences between the two systems provide insight into which aspects of education transcend culture, remaining the same over five millennia. It may very well be, and I expect that it is so, that classrooms are a common form of human organization and are independent of culture, existing in the same form in societies that have had no interaction with one another. I chose to look at the oldest civilizations, those of Sumer and Egypt, but I suspect that if I had chosen other civilizations, such as the Japanese or Chinese, this study would have shown that the classroom has developed along the same lines as those revealed.

In my attempt to gather information about the earliest schools, I set aside for a moment those histories which undoubtedly began with the Greeks, histories of relatively modern educational systems and those which focused on some geographical or cultural systems with no discussion of the beginnings of these systems. What was left on my desk was a group of thirty-one books which I have marked with an arrow (←) in my bibliography (p. 235). The title or subject classification of each of these books suggested that it might provide a comprehensive history of schools beginning with the earliest classrooms of Sumer and Egypt. These books were reviewed in an attempt to gather information about the first classrooms.

Of these thirty-one books, ten began their study with the schools of Greece despite the fact that there was some indication from their titles, tables of content, or cataloguing information that they would provide a more comprehensive study. Books which fall into this category include E.B. Castle's book *Ancient Education and Today*, *History of Education* by Luella Cole and H.I. Marrou's *A History of Education in Antiquity*. Marrou's book, written in 1964, has become a standard reference on the educational systems of Greece and Rome. Although some authors question Marrou's assumptions, or at least his choice of emphasizing certain aspects while disregarding others (Lynch, 1972, p. 2), most regard his work as authoritative on the subject of Greek and Roman schools. Two of the thirty-one books began even later than the period of Greek civilization, with Roman and medieval classrooms.

This left eighteen books which began their histories of education at some point other than Greek, Roman or medieval classrooms. Sixteen of these include some mention of classrooms or educational systems that existed before those of the Greeks while the others deal with Chinese and Jewish educational systems, but do not include

the Sumerian or Egyptian classrooms. Ten authors include something about education in ancient Egypt and eleven include some mention of the classrooms of Persia, Babylonia, Mesopotamia or Assyria. Therefore, of my thirty-one books that attempt to cover the ancient history of education, only eleven mention the region in which we may presume the classroom was invented, ancient Sumer. However, even though the geographical region is mentioned in these books, there is rarely any description of the Sumerian civilization; instead it is referred to as Assyrian or Babylonian or some other civilization that followed that of the Sumerians in the same geographical region. In the eleven books, there is a total of ninety-three pages given to the discussion of these civilizations, with no book having more than twelve pages. What is written is disappointing in its lack of detail. This is not surprising given that many of the histories were written before archaeological discoveries provided much of the information on these first schoolrooms.

One might expect there to be more written in these books about the schools of ancient Egypt as there has generally been a more wide-spread interest and examination of the early Egyptians than there has been of the Sumerians. The archaeological work in Egypt began earlier than work in the Tigris-Euphrates valley and the treasures that were uncovered there sparked the imagination of the general public. However, these histories did not devote more space to the discussion of the ancient Egyptian classroom than they did to that of the Sumerian classroom. In the ten books which discuss the educational systems of the Egyptian civilization, there is a total of one hundred and seventy-one pages given to the early Egyptians.

Although these educational histories make mention of the early civilizations, there is still a limited discussion on the actual classrooms that existed. Most histories

cover the geography, the political systems, the economy and the architecture of the early civilizations, but do not provide any details of the actual classrooms. This is not to say that geography, politics and economics are unimportant in understanding the development of the educational systems of these civilizations, but the authors fail to describe the impact of these influences on the classroom of the period. For example, the geography of the Tigris and Euphrates rivers provided the people who settled there with a fertile environment in which to grow crops. If it were not for the climate and rich soil of which the settlers took advantage, an abundance of food would not have been produced. It was this abundance of harvest that gave rise to the need for an administration; people were needed to count the bags of grain, store them and trade for them, for example. The need for an administration led in turn to a need for scribes and a literate workforce. Schools were the result. Yet there is a fair amount written about the early political and social systems but much less written about the early schools.

One book which gives a brief description of early classrooms in Mesopotamia is by James Bowen. In the first chapter of a two volume publication, *A History of Education*, he describes the culture that developed in the area. The twenty pages Bowen gives to this civilization begin with a discussion of pre-literate humans and finish with the civilization of Babylonia in 500 BCE. Bowen discusses the beginnings of the system of writing known today as cuneiform. Most authors agree that the development of a system of writing was one of the major accomplishments of the people who inhabited this region. Bowen also discusses in some detail the political system that gave rise to rulers like Hammurabi and the legal code which Hammurabi developed. The decline of the civilization is examined, as are those remnants of the

civilization that remain, such as literature and verse. Only five pages are given to a discussion of the classroom. However brief, his discussion of the training of scribes is based on archaeological evidence rather than conjecture as is the case in some other works, and I recommend it.

Bowen's book was published in 1972, allowing him the benefit of much archaeological work done in the Tigris-Euphrates valley. A book by Frank Pierrepont Graves called *A History of Education* was written much earlier, in 1909, before the region was explored scientifically. In the first part of his book called "Non-Progressive Education", he devotes nine chapters to the educational systems that existed before Greek education. In Part II, entitled "The Beginnings of Individualism in Education", Graves looks at the Greek schools as well as Roman schools, Jewish education and the early Christian schools.

In Part I, Graves credits Egypt with exhibiting the first signs of a civilization. He attaches great importance on the effects of the Nile on the economic development of the country. He presents the advances in architecture, as demonstrated by the temples and pyramids, as being the lasting contribution of the Egyptians. For example, he writes;

> While the Egyptians held to a rude belief in immortality, and in the case of the priesthood at least had begun to regard God as one, their religion never rose beyond a personification of natural forces at the best and a species of animal worship at the worst. (Graves, 1909, p. 40)

His writing is rooted in the early twentieth century, and his mind is closed to certain aspects of other cultures. Graves thought it appropriate to include a section on the

treatment of women in many of his chapters on individual civilizations, and he was rather unique in doing so. However, his discussion of women cursory; his main point was that women did not usually go to school.

Except for similar brief statements, the education of women is an area left unexamined by these historians. It is not just the education of women that is overlooked; women's rôle in these early societies has not been fully explored. One reason might be that the earliest Western accounts of early societies were usually written by men. All eighteen books about ancient education were written by men as were most of the general studies on the civilizations of Sumer, Egypt and Greece. These books have a male perspective; the authors probably focused on those aspects which would be of particular interest to them. Perhaps women and men are not interested to the same degree in the same aspects of a society. For example, written histories often use categories and periodizations that are masculine by definition; reporting and significance of events is often defined by power, influence and visible activity in the world of political and economic affairs (Gordon, Buhle and Dye, 1976, p. 75). Most histories include descriptions of power struggles and changes in heads of the state, events which might have had a greater influence on the position and activities of men in society than of women.

Women were not totally uninvolved in writing these early histories: Jaquetta Hawkes wrote of the early Sumerians and Egyptians (see Hawkes, 1963, 1973, 1976), and although some of her work is coauthored by Leonard Woolley, we might expect a different perspective from her and other women historians of this period (see Oates,

1979)[4]. But, these histories are in much the same style as those of the male historians and do not offer a feminist perspective.

This myopia of early historians towards the rôle of women in early history is aggravated by the fact that the literary output of these societies was most likely created by men. There were more literate men than women at all times during the civilizations of Sumer, Egypt and Greece (see Watterson, 1991, p. 25, 35, 124; Robins, 1987, p. 105; Cole, 1981, p. 226), so it is not surprising that the great majority of archaeological evidence in the form of documents and tablets was created by the men of the society. Perhaps equally as important as the gender of the original authors of these documents is the gender of the translators. One is left to wonder how the literary documents examined in this study would read if they had been translated by women instead of men. The Sumerian, Egyptian and Greek languages were deciphered by men[5], so the roots of any gender bias may be deeply seeded.

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[4]E. Ardener (1972) discusses the unrepresented female point of view in anthropological studies.

[5]A French officer serving with Napoleon in Egypt in 1799 found the trilingual (Greek, hieroglyphs and hieratic) Rosetta Stone. In 1822, Jean François Champollion used it to decipher the hieroglyphics of the Egyptians. The clue to the Sumerian cuneiform was provided by a 25-year-old British soldier and scholar who in 1835 was assigned to Iran. In the north he found a mountain face with an inscription, about 300 feet above the village below. Over a four year period, he would climb the rock face, suspend himself by a rope and copy the message. "He finally hired a native Kurdish boy who inched his way across the smooth surface, somehow clinging with his fingers and toes. While Rawlinson gave directions below, the boy made impressions of the script" (Kramer, 1967, p. 121). After many years, it was determined that the inscription had been written in Akkadian, Elamite and Old Persian (Kramer, 1967, p. 136). After it had been determined what languages had been used, the Akkadian words were translated, and because the Sumerian and Akkadian languages were similar, the Sumerian tablets could be deciphered. Sir Arthur Evans discovered the palace of King Minos at Knossos, Crete in 1900. There he found clay tablets written in an unfamiliar script. Two versions were discovered, the earlier version called Linear A and a more refined version called Linear B, but neither were deciphered until the 1950's when Michael Ventris translated the first tablets (Fagan, 1983, p. 178-179).

Women have been excluded from the histories of these ancient civilizations as they have from histories of other societies (see Beddoe, 1983; Rowbotham, 1973; Kinnear, 1982 and Mary Beard's 1946 pioneer work in this area[6]). Dale Spender (1982) said that one reason archaeologists did not tackle issues raised by feminist scholars was because these subjects were not considered academically respectable (Spender, 1982). Recently there has been an effort to discover women's place in the history of these ancient societies and create a more balanced picture (see Lesko, 1989; Ehrenberg, 1989; Watterson, 1991; Carroll, 1976; Harvey and Okruhlik, 1992). This study will attempt to provide as balanced a picture as possible, with an awareness that the available documentation may be one-sided. I believe it is important to include where possible a discussion of the rôle of women in the classroom; this study will show that the classroom has been used a means of social control where the control structures of society are mirrored and reinforced in the classroom. It is important to try to understand the rôle of women in this process of controlling and being controlled, and although a complete study of how women participated in the controlling nature of the classroom is outside the scope of this study, historical documentation of women's influence will be provided where possible.

Graves's history suffers not only from gender bias but from a lack of information. He included a cursory treatment of the schools of Egypt. When he says "Not much is known concerning the methods of teaching in Egypt," (Graves, 1909, p. 37), the reader must remember that these words were written before some major

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[6]An earlier work dates to the late eighteenth century, written by William Alexander in 1796 for "the amusement as well as instruction of the Fair Sex" (Alexander, 1796, p. *i*). It lacks a feminist perspective.

archaeological discoveries were made, including the initial excavations at the Valley of the Kings beginning in 1914 and the discovery of Tutankhamen's tomb in 1922

Similarly, Graves wrote of the Babylonians before discoveries determined that the region had been inhabited and a civilization, that of the Sumerians, existed before the time of the Babylonians or the Assyrians Although he briefly discusses the geography and what was known at the time about the religion and architecture, he concludes that "Practically nothing is known concerning the schools in which the elements were taught," (Graves, 1909, p 49) and does not elaborate on what elements were covered in the classroom, other than saying that the curriculum was practical and priestly

For his time Graves appears to be unique in that he includes discussions of the schools in China and India He limits himself to a comparison with Western systems, concluding that Chinese society and education did not develop throughout their history (Graves, 1909, p 75) His Western point of view is evident when he says that the "language and literature of the Chinese have remained quite as undeveloped as their religion and social order" (Graves, 1909, p 61) He goes on to say,

> Because of the Chinese opposition to anything new, there has never been any real philosophic speculation, or any development of physical or biological science among them The few theories they have invented are almost as devoid of fancy as they are of accuracy Chinese artists have shown much delicacy of touch in carving fans and card-cases, but while most of their work is pretty, it is cramped and out of proportion (Graves, 1909, p 62)

Of the educational system in India, Graves has much the same opinion:

> Thus education in India is based upon a gloomy religious belief and the rigid caste system accompanying it. The Hindu boy is impressed with the unreality and wretchedness of this life, and is enjoined to escape from it as soon as possible through reflection and inactivity. . . . .. It (education) is as little concerned with real mental culture as it is with training for manhood or citizenship. (Graves, 1909, p. 88)

The writings and ideas of this author who wrote at the turn of the century appear dated and biased when read today. The point of view that Western civilization, including school systems, has progressed[7] permeates much of the literature, not just Graves's book.

One author who attempts to "strike a balance between Oriental and Western ideas" (Mayer, 1966, p. 7) is Frederick Mayer who edited a volume of readings and articles entitled *Bases of Ancient Education.* He includes excerpts from the Upanishads and the Tao Teh Ching, and writings by Confucius, the Buddha, and

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[7]It appears from these readings that most historians treat the history of schooling systems as a progressive history. Progress seemed to be measured by the fact that more people were being educated in a standardized school system. At the time when Graves was writing in the early 1900s, this point of view corresponded with what was happening in industry and factories. Standardization and the elimination of diversity were considered progressive ideas in the early 1900s and these ideas were incorporated into factories in the form of assembly lines, as discussed on page 4. Scientific management and time-motion studies were techniques that were incorporated into industry with the aim of eliminating diversity among the workers (Gaither, 1990, p. 8-9). However, elimination of diversity and centralized control would be considered regressive ideas in modern production systems. Recent use of technology in factories has been to allow diversity in the specifications for the finished product as well as the means by which the product is made. Technology in factories has allowed for flexibility rather than standardization (see page 5). This study shows that the same shift in thinking has not occurred in the classroom, or has been resisted.

Chuang-Tze They are followed by the writings of Plato and other Greek writers Sumerian and Egyptian writings are not mentioned

Another book which includes some mention of schools before the time of the Greeks is Ralph Pound's *The Development of Education in Western Culture* In a very short chapter, he outlines the developments in Mesopotamia and Egypt from 3300 BCE to 600 BCE, but does not include any discussion on the actual classrooms of these civilizations and devotes only one paragraph to discussing curriculum and methodology

I believe these works are representative of the type of analyses of the earliest classrooms in the literature on educational history For the most part, those books written in the first half of the this century suffer from a lack of information about the 9Sumerian civilization Much of the excavation in Mesopotamia and Egypt had not been done and the translation of many writings were unpublished

However, today the writings of the early Sumerians and Egyptians have been translated and the results of the archaeological digs have been published This provides me with information previously unavailable It is with this material that I attempt to piece together a picture of what the early classrooms looked like Archaeological evidence, as recorded by those who unearthed the ancient sites of these early civilizations and those who followed, are examined These records provide much of the information about the early civilizations and their schools Sir Leonard Woolley led many of the expeditions that uncovered the remains of Sumerian cities Found within the cities were clay tablets with inscriptions and writings When they were finally translated, they turned out to contain not only commercial records,

but also school exercises, poetry and word lists. Such remnants illuminate the Sumerian classroom.

A leading expert on Sumer and its civilization is Samuel Kramer[8]. His writings on the civilization were examined with particular interest. In addition to the records of the archaeologist and the historians, the literature of these peoples provided clues about their system of schooling and their attitudes towards schooling. Great epics and lyrical odes date back to the earliest civilizations of Sumer.

Unearthing the classroom of antiquity has been for me a delight, not only in Sumer but in later civilizations. In many cases, titbits about classrooms were buried in the historical records as they pertained to commerce or religion. In what follows I try to deal only with factual material. There also exists a body of work on the history of writing. As the Sumerians were the first to use a system of writing, this literature also provided insight into the first schools.

This study begins with the first classroom which existed in Sumer sometime around 3000 BCE. What the classroom looked like and what went on inside it are described. Following this discussion, the classroom of Egypt is described in the same way, then the Greek classroom. Similarities between these schools and our twentieth century classrooms are striking. Many historians, including Graves, treat the history

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[8]Samuel Noah Kramer was born in 1897. He received his doctorate from the University of Pennsylvania in 1929 and continued to take part in archaeological expeditions to the Middle East after receiving his degree. From 1937 to 1939, he was a Guggenheim fellow and copied Sumerian literary tablets at the Museum of the Ancient Orient in Istanbul, Turkey. In 1949 he was appointed the University of Pennsylvania's Clark Research Professor of Assyriology and curator of the museum's tablet collection. He served as Clark Research professor of Assyriology from 1950 until 1968, and was made professor emeritus in 1968. He spent 1970-71 at the Sorbonne, Paris. During his career, he published many books and articles on the Sumerians and their literature, many of which are included in the bibliography (page 249). He remained active in research until his death in 1990.

of education as a "history of progress" (Graves, 1909, p 3) where each successive stage contributes something o the modern classroom Without a historian's perspective, it was perhaps easier for me to paint a picture of the school room throughout history based on facts rather than on the myth of progress

If one looks at a classroom while teachers and students are engaged in their work, one notices

- The Physical Layout of the Classroom How were the seats arranged, where did the teacher position herself or himself, were there desks, did the classroom exist separately or adjunct to the church or a home?

- The School Texts What did the children and teachers use as "books" and were there alternatives available?[9]

- The Curriculum Would there be changes in the subjects taught throughout history? What factors influenced curriculum design?[10]

- Teaching Methods How did teachers teach? What is the relationship between student and teacher throughout history? Have students and teachers always interacted on a hierarchical basis, or indeed, has there always been interaction between the teacher and the student? Has this changed throughout history?

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[9] A study of textbooks in schools usually begins with the printing press However, forerunners of the printed textbook were in use long before Gutenberg developed the printing press

[10] Questions of curriculum are recurring as schools are asked to provide courses in life skills to their students and be accountable to state and society It will be shown that this is not new, societies throughout history have given to the schools the responsibility to prepare its children for life The consequences, sometimes drastic as in the case of Spartan society, will be shown Although Jacques Barzun (1959) identified a decline in intellect and a rise in educational philanthropy as a result of surpluses of books, paper and ink provided by modern technology (Barzun, 1959), it will be shown that ancient societies were confronted with a similar situation brought about by demands of society and changes in communication media

- The Students Who were the students? Did the type of person who attended school change throughout history?

- The School Staff What was the person like who became a teacher? How was the profession of teacher regarded throughout history?

- The School Day How long did students attend school each day? How was the day arranged? What did they do during the school day?

My study of these factors provides a picture of the classroom of ancient Sumer, Egypt and Greece I chose those aspects because they seemed to me, as a teacher, fundamental to the human activity the classroom embraces.

It is the my hope that this brief history of the classroom will be of particular interest to those studying to become teachers The importance of studying history has been emphasized by many authors, and a course in the History of Education is a part of the curricula of many schools of education in Canada Calendars of twenty-six Canadian universities which offered undergraduate degrees in education were reviewed, twenty-one (just over eighty percent) had at least one course in the subject of History of Education None started with a period earlier than the Greek civilization, according to those that gave detailed course descriptions, although some course descriptions did not indicate the scope of study

The value of knowledge of the history of education to teachers has been addressed by Luella Cole among others Cole says that

> History does not repeat itself in the way a carbon copy repeats an original, but similar social, economic, and moral forces do tend to produce situations that are similar in different centuries and people do

> tend to react to such stimuli in somewhat the same way. (Cole, 1950, p.3)

This would appear to be the case in the field of education as well. Methods that the teacher may wish to use may have already been tried, sometimes many times, and a knowledge of the effects of these methods on the student may help the teacher decide on an appropriate methodology. The realization that principles of teaching and learning have been used throughout history with varying degrees of success, together with an understanding of the factors which influence the success of certain methods, should help the teacher select those methods which may be most successful in her own environment, as Cole suggests:

> Most of the successful ways of teaching pupils have already been tried by someone, and usually tried repeatedly. What the successful methods need is not discovery, but modern scientific proof of value, adaptation to modern conditions, and systematic use. (Cole, 1950, p. 4-5)

The classroom provides the teacher with an arena for discovering which methods work best for her and for her students. The factors which influence the success are described by Cole as follows:

> Since a school consists basically of a teacher, some pupils, and a curriculum, the same situations and problems continue to rise, generation after generation, and teachers are likely to think up the same answers to them. Perhaps a main objective of a course in the history of education is the prevention of those solutions that have already been tried many times and found wanting . . . unless the times have so changed that the idea may be worth trying again in modern surroundings; but even so, it might be well to season an experiment

> with a dash of history as an insurance against disappointment. (Cole, 1950, p. 4)

The interested student of teaching will find in these pages a description of the teachers, the students, the curriculum, and the methods used as well as a description of the environment in which schooling took place during the past 5000 years. Cole believes that "history should be of use to a young teacher because it furnishes him [or her] with a treasure trove of the world's best thoughts about education for well over two thousand years" (Cole, 1950, p. 5).

However, I hope that the student teacher and the experienced practising teacher will see this history as more than a lesson in methodology. It is my belief that the very first classroom looked much the same as our classrooms today. It would seem that the profession of teacher was one of the first to be established. The rôle of the teacher has been influential in civilizations as old as the Egyptian and Sumerian but the picture of the teacher's influence in this study may not be as flattering as Cole suggests.

It will be argued, among other things, that adult teachers cling to the traditional classroom structure so as to protect their positions of power over the students. I hope to show that there is a cycle of dependency in the relationship of teacher and student; one generation of teachers exert power and control over the children in their care, and the children grow up to do the same things to the next generation of students. This has always been the case, as the histories of Sumerian, Egyptian and Greek schools will show. It seems that within the classrooms of each civilization there has been the temptation of those in powerful positions to bully the young and that society has entrusted to the classroom and the teacher the responsibility of teaching the children

the meaning of power and control. I will attempt to show that the pedantic methods used by teachers throughout the histories of these civilizations were designed to further accentuate the teacher's superior position over the student, and pedantry has always been a consistent and pervasive characteristic of the interactions between teacher and student. These characteristics of the classroom are so pervasive that any significant change in them may have caused the learning site to be considered, and called, something other than a classroom.

This history will show that the classroom has resisted change since its earliest development despite advances in technology which have affected other institutions. What is it about the classroom and what goes on inside it that seems to prevent substantial changes? It will be shown that changes in the classroom are really only "cosmetic" changes, to borrow the term that Wolfgang used to describe changes in prisons (Wolfgang, 1979, p. 18) and after describing the classrooms of Sumer, and those that followed in Egypt and Greece, the final chapter will present some conclusions as to why the classroom has changed so little.

The idea of writing this book came to me while visiting archaeological sites at Saqqara and Giza in Egypt. For how long, I wondered, has building a classroom and bringing young people together been a thing to do?

Chapter 2: Education in Sumer

In the early part of the third millennium BCE, somewhere in the valley between the Tigris and Euphrates rivers, the first classroom was established. This fertile agricultural land, the lower part of the valley, was known as Sumer. The Sumerian civilization is considered to be the world's first civilization, and in addition to the first schools, the Sumerians are credited with other notable achievements such as the discovery of writing and the wheel. Yet, the name 'Sumer' is not as widely known as might be expected. Other names have been used, with less specificity and accuracy, to refer to the area which includes Sumer. The Greeks later called the entire valley Mesopotamia, meaning "between the rivers". Sumer corresponds to modern day Iraq from north of Baghdad to the Persian Gulf. Classical writers also referred to the entire area as Babylon, although the actual city of Babylon was located in the northern part of Mesopotamia, and became an important cultural and governmental centre only after the fall of the Sumerian civilization. Hammurabi (ca. 1800-1600 BCE), the great Amorite king known today for writing the first legal code on stone tablets, created the Babylonian empire by bringing together the southern Sumerian city-states and the northern part of Mesopotamia. The capital was established at the city of Babylon around 1900 BCE, about a thousand years after the Sumerians had created their civilization.

There is evidence of classrooms having been established by the Sumerians as early as 3000 BCE. Until this time, it is probable that the education of children was not conducted in a formal school setting; there was no such thing as a classroom.

Instead children were instructed within the home. Certainly the absence of a classroom does not mean that the education of children was, up until this time, ignored. From the earliest times, the passing down of knowledge from society's elders to the children has been essential. Cave pictures suggest that children were taught certain lifeskills thousands of years before the Sumerian civilization[11]. Knowledge of how to distinguish poisonous and safe berries and how to predict the weather was probably essential for the survival of the children and the society. However, this type of instruction occurred within the family or clan and was not associated with specialized schooling.

Once some of the children started being educated outside the home, the schooling of children became more structured. Along with the actual common meeting place, the classroom, there developed a curriculum of studies and a formalized methodology of instruction. According to most historians, classroom education was reserved mainly for the boys of Sumer and girls did not attend (Kramer, 1963, p. 230-232; Hawkes, 1973, p. 214). Referring to a period following Hammurabi, Batto says that women in Mari "might have received an extensive education and served as a scribe" (Batto, 1974, p. 5) but does not suggest when the practice may have started. There are records of women taking part in court proceedings, owning land and other

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[11]It is suggested (Leroi-Gourhan, 1982) that the pictures found on the cave walls at such sites as Lascaux, Altamira and Niaux were the focal point of community gatherings, such as might be found at temples. Although Leroi-Gourhan says "it is not easy to place the parietal artist in his social role" (Leroi-Gourhan, 1982, p. 76), I suggest that if the decorations on the cave walls were meant to involve "the whole community" as Leroi-Gourhan suggests, the children would also be exposed to these drawings. The drawings of animals, for instance, may have been the forerunners of the Sumerian and Egyptian word lists; Leroi-Gourhan says that the presentation of the animals represent a quantitative list of "the whole inventory of species present in France, Spain and Italy" (Leroi-Gourhan, 1982, p. 50).

property, and they had the same legal rights as men (Van De Mieroop, 1987, p. 57, 63; Batto, 1974). Women were involved in the administration of Sumer and constituted a large part of the labour force: within the active textile industry, women were organized into groups of twenty with a usually female supervisor (Van De Mieroop, 1987, p. 63). This suggests women may have attained a level of literacy associated with classroom instruction.

The development of the Sumerian school coincided with the invention of writing. It took the discovery of writing to create the need for the classroom. It became important that people learn how to write, and then decipher the writing. The writing itself was crucial for the development and sustainment of the Sumerian civilization[12].

As Sumerian society moved away from one form of information storage and transmission, cave drawings and pictograms, towards the inscribing of signs on clay tablets, and finally to cuneiform writing, the method of instruction also changed. The invention of writing sparked the invention of the school.

The Sumerian school was called the edubba, which translates to mean tablet-house, clay tablets being the writing medium of the Sumerians. Throughout its history, the primary purpose of the Sumerian school remained the same: to train scribes to read and write. Slowly the edubba became an important centre of culture and literary output. Inside the edubba, most of the Sumerian literature was composed. Epic poetry, such as the tale of Gilgamesh, who has been called the first human hero of

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[12] Toynbee says, "It can almost be taken for granted that a universal state will have provided itself with official media of mental communication, and that these will include not only one or more languages for spoken intercourse, but also some form of visual records based on a written notation." (Toynbee, 1988, p. 296)

literature (*The Epic of Gilgamesh*, p. 7), was written in the edubbas on clay tablets which served as textbooks (*The Epic of Gilgamesh*, p. 7). Such poems and proverbs were written to preserve the oral history of the people and were studied by the schoolchildren. Not only were they studied, but they were also copied, over and over, by the pupils. The preservation of this early body of literature, epics which antedate Homeric tales by at least one and a half thousand years, is a result of the many copies which were made within the edubbas by the teachers and the children.

THE CLASSROOM

Within the valley there have been excavated two good examples of these early school rooms. What many believe to be the first classroom was discovered in the city of Mari during excavations led by A. Parrot during 1934-35 (Parrot, 1960). Mari lies far to the west of Nippur and was not considered by some early archaeologists part of Sumer "proper" until the excavations by the French revealed many similarities in the culture. Although it lies outside the boundaries of what was once considered Sumer. Kramer (1963) and Hawkes (1973) agree that Mari and other such cities shared in the same advances in technology and literature as those cities nestled in the cradle of the rivers. Because of these similarities in culture and architecture, it is now widely accepted that Sumerian influence spread to Mari, and that Mari is representative of other Sumerian cities (Bowen, 1972, p. 13; Mallowan, 1965, p. 17; Batto, 1974, p. 3-5; Cooper, 1989, p. 48).

In the royal palace at Mari two rooms which date back to about 1800 BCE were uncovered. In the rooms were rows of benches made from baked brick. The benches ranged in size from small ones able to seat only one person, to larger

benches on which up to four people could sit The layout of the rooms led researchers to believe that these rooms were used as schoolrooms (Kramer, 1981, p 8; Hawkes, 1973, p 215)

Figure 2-1
The first known classroom (Bowen, 1972, p. 28f)

The arrangement of the benches led Hawkes to believe that "Mari produced the only specially furnished edubba" (Hawkes, 1973, p. 215). The photographs of the excavated rooms gives one the impression that the room was used for some type of congregating of people. Those who worked on the excavation must have felt the same; pictures of the site show the workers seated at the benches, as if waiting for further instruction.

Figure 2-2
Workers at Mari site (Aaboe, 1964, p. 13)

The absence of school tablets at the site led others to believe that the rooms were not used as a classroom. Another explanation for the layout is that the room acted as the "official scriptorium for the palace scribes" (Hawkes and Woolley, 1963, p. 659), but if this were the case, one would think there would also have been an abundance of tablets found. The absence of tablets does not necessarily mean the rooms were not used as classrooms, or scriptoriums. Tablets were commonly carted away and used as landfill. It is more likely, however, that students' tablets would have been discarded rather than scribes' tablets. Those of the scribes' would likely have been preserved; there are examples of libraries and book lists during this period.

A second example of a classroom was uncovered in the city of Ur, one of the most famous cities of Sumerian civilization. Ur lies about half-way between Baghdad

and the head of the Persian Gulf, about sixteen kilometres west of the present course of the Euphrates[13].

Ur became well known after the excavations of Sir Leonard Woolley at the site during the 1920's. Woolley's work and his enthusiastic writing of it in popular books sparked much of the interest in the ancient civilizations of Mesopotamia[14]. Much of the interest was inspired because of Woolley's analogy of the city of Ur to the 'Ur of the Chaldees' mentioned in Genesis 11:29-32. Woolley's upbringing as the son of a Christian clergyman might account for the many comparisons he made between the Old Testament and his archaeological findings. Woolley believed that Ur was the birthplace of Abraham, and although others are not in complete agreement as to Abraham's chronology or history, let alone his actual existence, many agree there is a kernel of truth in Woolley's proposition. Certainly Biblical parallels to Sumerian literature are well documented and the Sumerian story of the deluge is often compared to the Biblical story of the flood[15]. The Biblical comparisons, together with

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[13]At the time of the Sumerian civilization, Ur was on the coast, but over the centuries the coastline has moved. The modern city of Muqayyar, close to ancient Ur, is 180 kilometres inland and so would not be described as coastal, but from the literature it is known that Ur had sea-going vessels, harbours, and bones of sea perch were found there (Lloyd, 1978, p. 19; Adams, 1960, p. 189).

[14]Woolley has been criticized for the amount of detail which he presumed but it was no doubt this detail that made his writings so popular. It has been said that his "vivid historical imagination which, though it may not stray too far from probability, sometimes stretches the available archaeological information to its limits in complete reconstructions of individual buildings" (Ed. preface, Woolley, 1928, p. 9). The distance that Woolley maintained from academia made him particularly vulnerable to criticism, but this having been said, Woolley's descriptions of his excavations provide the basis for much of what has been written about ancient Sumer.

[15]In 1872, George Smith of the British Museum read a paper at the Society of Biblical Archaeology entitled *The Chaldean Account of the Deluge* (Smith, 1873). This was the first time the parallels between *The Epic of Gilgamesh* and the Old Testament were explored and Smith found that the most remarkable parallels were found in the

the golden treasures found in the Royal Cemeteries at Ur, increased public awareness in archaeology, especially in Mesopotamia.

The school at Ur is from the Larsa period of Sumerian civilization (c.1780 BCE) and was in a private home. Woolley and his co-workers gave this house the address "No. 1 Broad Street." The house at No.1 Broad Street was typical of houses of the period. It did, however, undergo major renovations at some point which made it less typical than other homes, and indicates that it was used for an unique purpose.

A map of Ur is given here, showing the location of the school at No. 1 Broad Street as well as No. 14 Paternoster Row, which was a restaurant "with a wide window opening on to the street and a brick counter immediately inside" (Oates, 1979, p. 77). The letters A, B and C on the map mark the locations of "wayside shrines" (Oates, 1979, p. 77).

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deluge accounts. The comparisons have been documented in later studies, including Heidel, 1967; Lambert and Millard, 1969; Constable, 1987 and Sollberger, 1971.

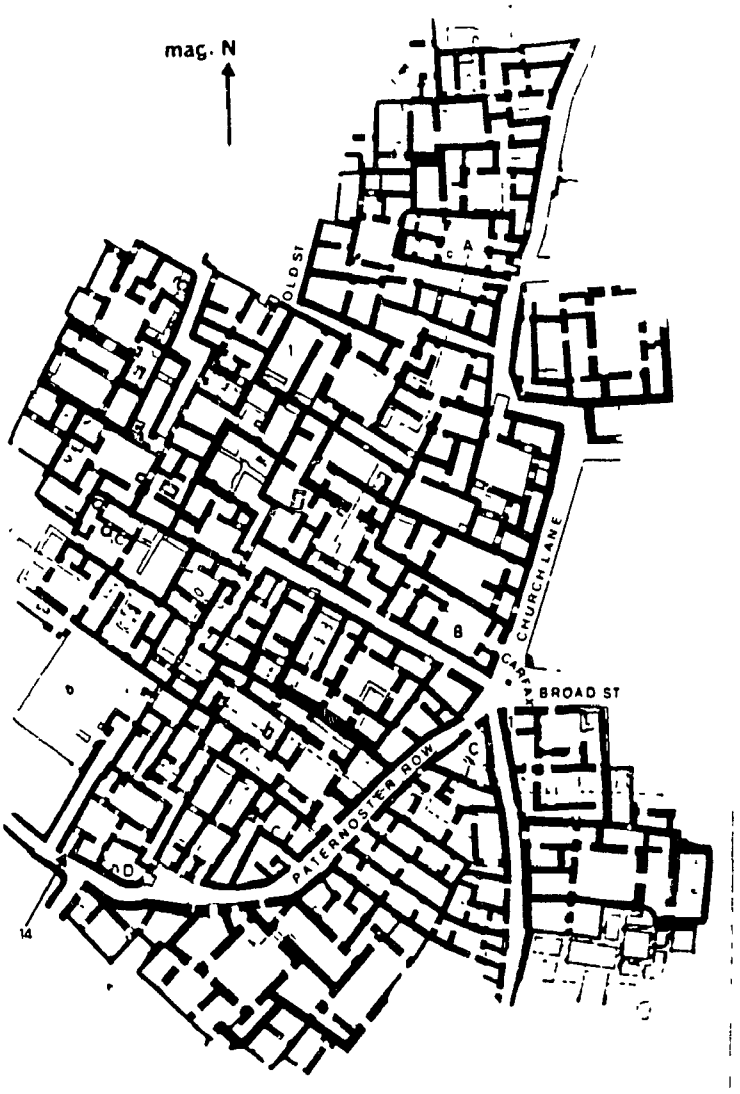

Figure 2-3
A map of the city of Ur (Oates, 1979, p. 77)

The original structure had a front door that opened to a lobby. A doorway led from the lobby into a courtyard. Off the courtyard there were three doorways: one led to a small guest room, complete with its own closet, another led to the servants' room, and the third opened to a staircase which led to rooms on the upper level. Beneath this staircase was a lavatory.

From the guest room a doorway led to a corridor. This walkway ran along two sides of the chapel. The chapel area itself took up about half of the floorspace. This was a disproportionate amount of space given to a private chapel and for this reason, the house was considered to have less living area than the average home (Hawkes and Woolley, 1963, p. 659). However, the house was owned by a priest named Ihmil-Sin, which could explain why such a large area was given over to the chapel.

At some time after the house was built, reconstruction occurred. A new entrance was built leading from the street into the courtyard. Not only was the doorway between the lobby and the courtyard shut off, the doorways leading from the courtyard to the servants' room and into the lavatory were also sealed. A new door was opened between the servants' room and the corridor around the chapel. This renovation cut off the guest room and courtyard from the other rooms and the chapel as shown below.

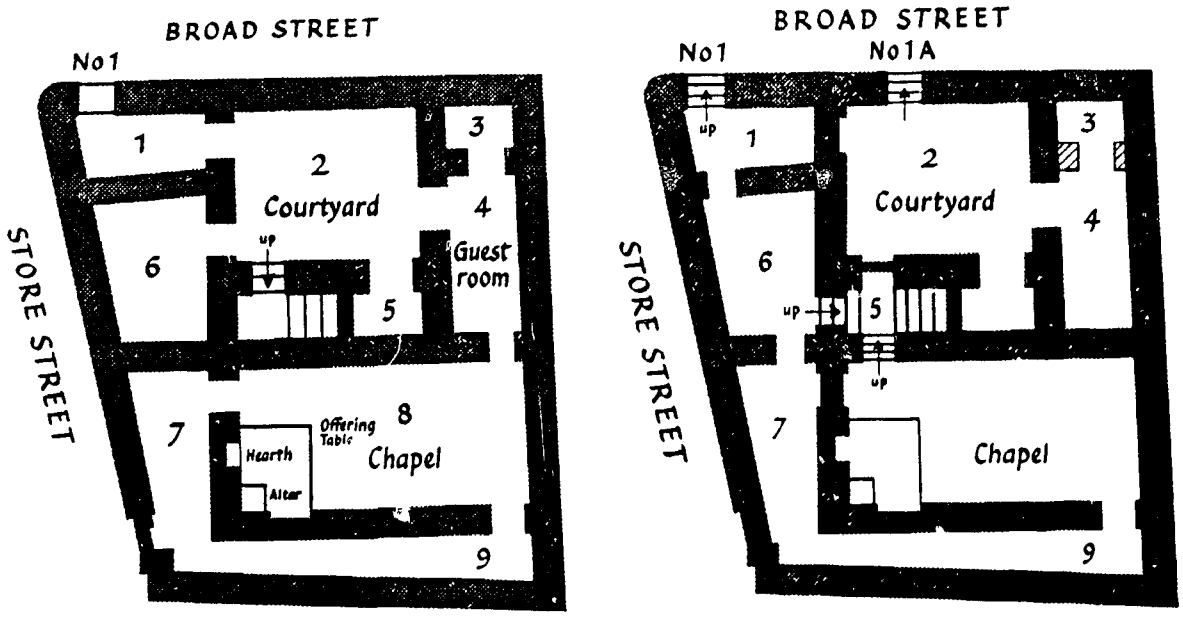

Figure 2-4
Floor plan of No. 1 Broad Street, Ur (Hawkes and Woolley, 1963, p. 661)

Hawkes and Woolley say that "it was very obvious that his alterations in the building were intended to adapt it to the purposes of a school" (Hawkes and Woolley, 1963, p. 660). The renovations allowed the courtyard to be used as a school without disturbing the chapel area. The headmaster could come down the stairs from the upstairs quarters into the courtyard where the students would be gathered. Such a gathering in the courtyard is described in a cuneiform text:

> Into the meeting of master, the courtyard of the tablet-house
> Come, my son. You shall sit before my feet.
> Now I am going to talk to you; open your ears.
> (Hawkes and Woolley, 1963, p. 660).

If the design of the house was not enough to convince the archaeologists that this was a school, in the courtyard were found nearly two thousand tablets, many of which had been used as school exercise tablets. These "bun-shaped tablets" (Hawkes and Woolley, 1963, p. 660) showed the teacher's writing on one side, and the student's attempt to copy it on the other side. Some of the tablets contained only single syllabic signs, suggesting that some of the pupils were at the earliest stage of learning. Other tablets contained lists of words, for example lists of words all beginning with the same syllable, or as will be discussed later, lists of names of animals, or birds. Others tablets contained excerpts from literature and some were covered with mathematical problems and multiplication tables (Hawkes and Woolley, 1963, p. 660). These would have probably been completed by older, or more advanced students. An example of such a tablet is shown below. It dates to 2350 BCE and contains lists of livestock.

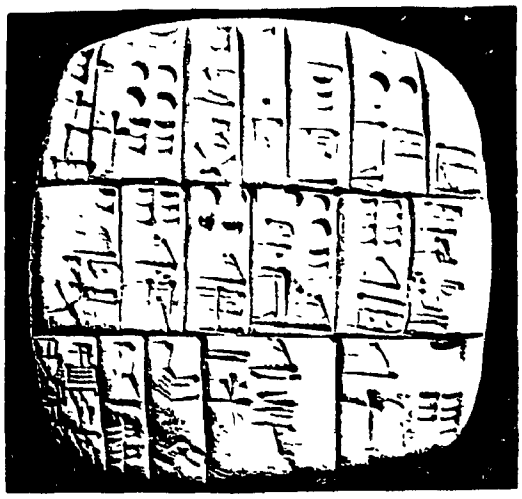

Figure 2-5
A Sumerian tablet (Constable, 1987, p. 39)

Despite the different levels of learning represented by the students, the number of students must have been quite small because of the size of the room. It is estimated that the school could accommodate about two dozen students, which would be typical of schools of that time (Hawkes and Woolley, 1963, p. 660; Bowen, 1972, p. 13). It is difficult to state with any certainty how many schoolrooms existed, and how many children in total were taught in classrooms. Thousands of school tablets have been uncovered and identified at other sites, but there are no characteristics at the sites which make them distinct as classrooms.

A Sumerian riddle to which the answer is 'the school', was found on a tablet excavated at the city of Ur.

(What is it:)
A house which like heaven has a plow,
Which like a copper kettle is cloth-covered,
Which like a goose stands on a base,
He whose eyes are not open enters it,

He whose eyes are (wide) open comes out of it?

Its solution is: It's the school.

(Kramer, 1963, p. 236)

In deciphering the first line of the riddle, it helps to know that the Sumerians were knowledgable about the stars. Although the Greeks are often credited with the identification of the stars and the constellations, the Sumerians had devised lists of the stars early in their history, and later used the stars for developing personal horoscopes (Hawkes, 1973, p. 229-230). They had also attributed names to some constellations. There are references in prayers to the constellation we now call Ursa Major and to the group of seven stars of that constellation which was called the plough (Oppenheim, 1964, p. 308). The first line reference to the plough might refer to this constellation. Education, and writing, were important to the Sumerians, and the edubba might be as significant to the people of Sumer as Ursa Major was dominant in the heavens.

Associated with this interpretation is the importance of the plough to Sumerian life. Combining their knowledge of animal husbandry and mechanization, the Sumerians were the first to hook the oxen to the plough, which eventually allowed them to cultivate a surplus of agricultural produce. This surplus of goods eventually gave rise to communities of specialists, prosperity and a need for administration, writing and scribes. The reference to the plough might have signified this relationship between agriculture and the edubba.

The reference to the plough in the *heavens* might also refer to the significance of the goddess Nidaba within Sumerian society. Nidaba, the goddess of writing, literature and the edubba was also the goddess of grains, grasses and reeds as well

as the goddess of technical and astronomical texts (Jacobsen, 1987, p 271, p 394 note) In visual representations, bundles of reeds are usually shown protruding from the shoulders or body of her otherwise human form The reference to the plough constellation would suggest the goddess of astronomy Nidaba which in turn would suggest learning and the school

Nidaba's involvement in both astronomy and the scribal arts is related in a passage *From The Cylinders of Gudea*

> Being that the maiden coming to the fore,
> who had places with sheaves made on her,
> who held a stylus of fine silver in the hand,
> set a star tablet on the knee,
> and consulted it,
> surely this was my sister Nidaba,
> she will have announced to you
> the holy star above for the building of the house

In this excerpt, Nidaba announces the star which by its appearance marks the proper time for the building of Gudea's house The link between time for school and the time for harvest exists even to this day In areas where a harvest is due, school is suspended A present day example occurs in Carleton County, New Brunswick, Canada where children are required to assist in the harvesting of the potato crop and classes are put on hold until the crop is brought in

In *The Cursing of Akkadê*, the goddess Nidaba is referred to as "heavenly Nidaba" and seems unique in this respect amongst the other deities mentioned "A second time Suen, Enki, Inanna, Ninurta, Ishkur, Nusku, and the heavenly Nidaba verily spoke" (Jacobsen, 1987, p 372) If the goddess Nidaba was somehow

connected most strongly with the heavens, this would also help explain the reference to heaven in the first line of the riddle.

The second line of the riddle is translated as: Which like a copper kettle is cloth-covered. Metallurgy was quite advanced in Sumer and copper was widely used. However, its use in making kettles or pots seems to be limited, as most literary references to copper suggest it was reserved for use as armour (copper helmets are shown in pictures) or for jewellery and ornamentation. Most baskets and pots were made from clay. Copper was not only expensive and highly valued, but the knowledge of the metallurgists was a closely guarded secret. There was a great deal to learn before the proper mix of ingredients and conditions could be achieved and an item produced. These secrets were closely guarded and eventually guilds sprang up to protect the trade secrets of those who had mastered the skills (Hawkes and Woolley, 1963, p. 573-574). In deciphering this line of the riddle a copper kettle might not only suggest something of value, as the edubba was valued, but also something that could be made only after attainment of special knowledge and admittance into a special group. The skill of writing learned within the edubba permitted a Sumerian entrance into the select group of scribes. The covering of the copper kettle suggests this sense of secrecy, something kept under cover.

Because it was a metal, copper also suggested permanency, and to the Sumerians writing also represented permanency. Something cast in metal would last, as would the oral myths and poetry of the Sumerians once committed to clay tablets by the scribes. In addition to suggesting value and secret knowledge, the metal might suggest the permanency of writing, which would be taught in the edubba.

The third line of the riddle refers to a goose and remains an impenetrable mystery The last two lines of the riddle suggest a modern metaphor for education He whose eyes are not open enters it, He whose eyes are (wide) open comes out of it? Certainly the riddle supports the fact that there was an identifiable and separate place within Sumerian society which was known as the school The very existence of a riddle with the solution "the school" indicates the importance of education in Sumer and its distinctiveness from temple and home

Although it might be expected that more than two classrooms would have been discovered, the schools at Mari and Ur are the only two documented cases It could be that the classes met in rooms that looked like any other rooms, and that the benches in the Mari room were either for some other purpose than seating students, or were the exception The fact that archaeologists would be looking for a classroom that fit the current model, and might overlook evidence of a meeting place of a different type might also account for the shortage of descriptions of classrooms Records of the excavations contain accounts of the riches and treasures found in the cities, and in the midst of these findings, discovering a probable classroom might not have been recorded.

The relationship between the church and school in Sumer is not clear In most societies, the school is linked with the church, especially in the early stages of its development One might expect classrooms to be found within the Sumerian temples, as they were found in Egyptian temples and as it was at Mari The riddle cited above establishes the link between the classroom and heaven, but the extent to which the school and church were associated is not clear

THE CHURCH AND THE SCHOOL

The Sumerian school was originally associated with the temple, and the graduate scribes were mainly involved in the administration of the temple. The administration of the affairs of the temple was not an insignificant task; the temples were centres of administration for the entire city, and dealt with property transfers, agriculture and payments for goods.

However, within five hundred years or so of its inception, the edubba apparently separated from the temple. Hawkes speculates that the reason for this division of temple and school was that the priests did not want the students "running into or exploding out of their orderly precincts" (Hawkes, 1973, p. 215). It is clear from the essays written during this period, which will soon be discussed, that the schoolchildren were indeed rowdy, but whether this was the primary or only reason for the split remains unclear. It could be that as scribes took on responsibilities outside the temple, the schools also became more secular. Another explanation could be that the demand for scribes exceeded what the temples could produce and secular institutions were created to satisfy the demand. It is clear that the scribes became more and more valuable and in demand within Sumerian society as cities grew and travel and commerce expanded.

There is some evidence that the schools were independent from the temples. What is known about the Sumerian school comes from two sources: school texts and essays written about the schools. The tone and content of these texts and essays is secular; they deal with the earthly matters of everyday living. This might lead one to believe that the schools affairs were not those of the temple, the centre for spiritual and religious matters. What must be considered is that the temples during the

Sumerian civilization were also very much involved in the daily administrative details of the citizens. The overall predominance of tablets dealing with administrative matters rather than literary or religious tablets supports this. The relative lack of references to spiritual matters in the school texts and essays might suggest merely that the temples too were more concerned with administration than spiritual matters.

The cost of schooling was borne, for the most part, by the student's family. The fact that the temples did not contribute in any large measure to the cost of educating the children, leads some researchers to believe that the schools were completely independent of the temples (Hawkes, 1973, p. 219-20). Scribal priests were responsible for instruction but were paid from tuition collected from students. Royalty also contributed to the cost of schooling, perhaps with the understanding that the scribes would write royal hymns praising the king (Kramer, 1979).

The art of writing was always associated with the gods, regardless of the other links of school and temple. From a poem unearthed at Lagash comes a description of the building of the Eninnu temple by Gudea. Gudea had a dream that instructed him to build the temple, and consulted the goddess Nanshe to interpret the dream. In the dream, at daybreak a woman appeared holding a gold stylus and studying a clay tablet on which the stars of heaven were drawn. The dream is interpreted as follows:

> The woman holding a gold stylus and studying a clay tablet on which the story of heaven was depicted - that is Nidaba (the goddess of writing and the patron deity of the edubba), who directs you to build the house in accordance with the "holy stars." (Kramer, 1963, p. 138)

This excerpt suggests that there was a goddess of writing, and as such, writing and the school would seem to be associated with the spiritual In other civilizations such as the Egyptian civilization, schools were closely associated with the temples The schools in Sumer appear to be more involved with secular concerns, there are few school tablets that deal with the gods or religious matters

SCHOOL TEXTS

The textbooks used by the Sumerian schoolchildren, the tablets of clay, reveal much of what is known about the curriculum and the method of instruction Some of the first textbook-tablets, dating from around 2500 BCE, were found during excavations in Shuruppak as early as 1900 Shuruppak was the home city of Ziusudra, the Sumerian counterpart to the Biblical character, Noah, in the Sumerian stories of the deluge (Kramer, 1963, p 229) There have been thousands of tablets found Many of the clay tablets found in Shuruppak and other sites in the Tigris-Euphrates valley, were discarded from the schools and temples and carted away by the villagers and used as fill upon which to build their homes "Almost any excavation in private houses is likely to provide such discards" (Jacobsen, 1987, p xii) Many of the sites have layers upon layers of clay tablets, each layer corresponding to another stage of development

Whereas pictures had been carved on stone for centuries, clay represents the first form of writing material produced by artificial means (Gaur, 1984, p 42) Because Sumer was lacking in stone and wood, the use of clay tablets for writing probably developed from necessity and because the Sumerians were familiar with the properties of clay Clay had been used in making bricks for building house, temples,

and irrigation canals before it was used for making writing tablets (Gaur, 1984, p 42) It has been suggested that other more perishable materials, like wood or papyrus, might also have been used, but would not have survived as did the clay tablets (Diringer, 1962, p 37), although no signs of any other writing material have been found

The clay used by the Sumerians was of exceptionally high quality and the items made from it were able to survive

> Clay is practically indestructible If it is of good quality and has been baked, everyone knows that it can withstand the elements without suffering in the least it is not common knowledge that tablets or jars, even when unbaked, will keep indefinitely For this, of course, we need a good kind of clay (Chiera, 1938, p 17)

Delaporte says that "the preparation of the tablets for writing was a long process that involved collecting and perhaps sifting the clay before it could be kneaded into tablets" (Delaporte, 1925, p 199) Sometimes, if the clay was to be used by the Sumerians for important tablets, it was washed before being shaped Impurities, such as pieces of wood and leaves would float in the water, while sand and stones would sink In this way the clay was made ready for use This type of manual washing was rarely necessary as the rivers usually washed away most of the impurities, leaving a layer of fine clay along the riverbanks which could be gathered and used (Chiera, 1938, p 18) The tablets, once written upon, were baked or left to dry in the sun

An unbroken tablet was usually about as big as a hand (Aaboe, 1964, p 6), although others have been found that were much smaller Kramer tells of one tablet

that, when translated, turned out to be "the first library catalogue," a list of sixty-two literary works. This tablet was only two and a half inches in length and one and a half inches in width. The scribe had divided the tablet into columns and recorded the titles in "minute script" (Kramer, 1981, p. 250). Other tablets were as small as one inch square. One of the largest tablets was written much later than those found at Shuruppak, around 690 BCE, and is forty-six by thirty centimetres (Oates, 1979, p. 15).

The size and shape of the tablets varied depending on the city where they were created and when they were made, but the earliest are round. Within about fifty years, the tablets acquired "the rectangular shape which they are to keep for the future" (Delaporte, 1925, p. 199). The shape and appearance of the tablets not only signified when and where the tablet was made, but might also have indicated the actual school which the scribe attended (Oppenheim, 1964, p. 239). In addition, the content of the tablet also influenced its size and shape. Clay tablets are often classified without reading them by their shape; legal tablets would look different from school texts, for instance (Oppenheim, 1964, p. 240). School texts are usually "small, lentil-shaped disks" (Oppenheim, 1964, p. 243).

The majority of tablets which have been discovered contain administrative and commercial records. Only about one percent of all tablets unearthed are considered literary. Some tablets, like those found at Shuruppak do not appear to have any administrative value and archaeologists believe that these tablets, which have more of a literary than administrative nature, were used as school textbooks.

Although there have been unearthed many more commercial tablets than literary or scholastic tablets, there have been a large number of school texts discovered as well As Kramer tells it, there have been unearthed

> hundreds of practice-tablets filled with all sorts of exercises prepared by the pupils themselves as part of their daily schoolwork, their scripts range from the sorry scratches of the "first-grader" to the elegantly made signs of the far-advanced student about to become a graduate (Kramer, 1963, p 230)

Much of what there is to learn about the Sumerian schools comes from the content of these literary tablets the literature of the Sumerians, the descriptions of everyday events and the content of the school texts reveal what is known about the Sumerian school

It seems that the scribes were responsible for more than passing on knowledge to the students, or writing the literature which would be studied They may have made up the written signs to represent the spoken word, and taken credit for it by inscribing their name beside the sign At the time when writing was being invented in Sumer, there may have been propriety for the written word

> A large collection of tablets unearthed at Shuruppak contained sign-lists used as school texts The signs are grouped by subjects, different sorts of fish, for instance, are listed consecutively, and after each sign is added the name of the clerk or priest who invented it (Childe, 1951, p 137)

THE CURRICULUM

The contents of the tablets represent what is known about the curriculum of the Sumerian schools. Many of the tablets contain lists of animals and plants but others contain lists of the names of gods. It appears, however, that most of the instruction was in secular subjects. From the content of the school texts it is determined that the Sumerian school's curriculum consisted of two primary groups; the first is described as semiscientific and scholarly and the second as literary and creative. (Kramer, 1963, p. 232).

The Semiscientific

The first part of the curriculum, the semiscientific, grew out of the need to teach the scribes how to write rather than a sense of scientific inquiry for its own sake. Teaching the skill of writing was always the primary purpose of the edubbas; the development of a "semiscientific" subject area was perhaps a by-product. In order to learn to write, students were expected to copy over lists that had been created by the teachers.

These lists contained such things as the names of birds and trees, insects, counties, cities, stones and minerals (Oates, 1979, p. 164). "These textbooks became ever more complete and gradually grew to be more or less stereotyped and standard for all the schools of Sumer," says Kramer (Kramer, 1963, p. 233). In creating lists for the pupils to copy, the teachers created a categorization of what they saw around them, although this categorization had little to do with formalized scientific groupings. However, the texts had the look of scientifically formed groupings. A tablet with the names of plants and animals listed and grouped is shown below.

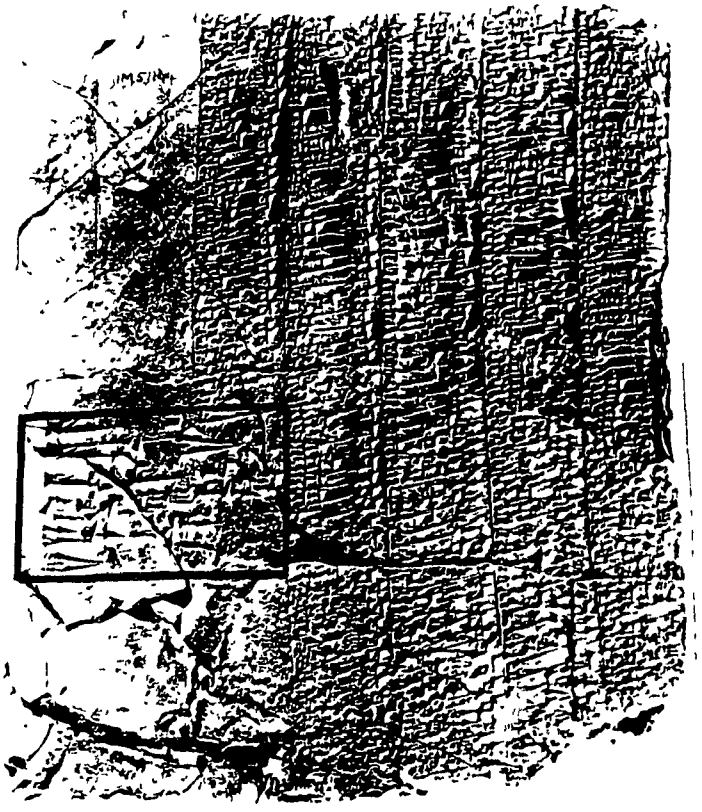

Figure 2-6
Sumerian word list (Kramer, 1981, p 205)

Grammar was also represented and "a number of school tablets are inscribed with long lists of substantive complexes and verbal forms" (Kramer, 1963, p 233). Also presented on the tablets were mathematical tables and problems, together with their solutions although these tablets were less common that the literary texts.

The mathematical problems devised by the school masters were used to instruct the pupils in the skills needed for administrative duties. As part of the administrative duties of the scribe, he would be responsible for calculating such things the size of land plots, determining borders, and estimating the yield from fields. The mathematics taught in the schools was of a very practical nature, and probably fitted in well with the administrative duties of the scribe.

One such mathematical text, dating to around 1700 BCE, shows geometric shapes such as a square divided into four triangles The drawings were accompanied by problems the student would be asked to solve, such as the calculation of the area (Constable, 1987, p 40) The Sumerians were calculating the area of fields, multiplying the length by the width, as early as 3000 BCE (Childe, 1942, p 156).

To represent numbers, the Sumerians used both a decimal and a base sixty system[16] Many of their tablets show calculations using a sexagesimal scheme, although civilizations which emerged later would usually adopt the decimal system It is suggested that the base sixty was a conscious choice by the Sumerians as a magnitude of sixty units can be subdivided easily into halves, thirds, fourths, fifths, sixths, tenths, twelfths, fifteenths, twentieth, and thirtieths, affording ten possible subdivisions (Boyer, 1968, p 25)

The numbers are constructed using two basic symbols a vertical wedge representing a 1, shown on the left in the following diagram, and a "cornerwedge" meaning 10, shown on the right (Aaboe, 1964, p 8)

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[16]Tobias Dantzig says that "in all Indo-European languages, as well as Semitic, Mongolian, and most primitive languages, the base of numeration is ten" (Dantzig, 1954, p 12) He says that other languages bear traces of the use of two other bases, base 5 and base 20, which originated among tribes who counted on the fingers of one hand or on their toes in addition to their fingers (Dantzig, 1954, p 13) and says that a binary system "exists among the most primitive tribes of Australia and Africa (Dantzig, 1954, p 14), but does not mention the sexagesimal system used by the Sumerians He gives an example of the Sumerian notation showing the number 60 represented as six cornerwedges (Dantzig, 1954, p 22), a notation unlike that shown in other Sumerian documents (Aaboe, 1964, p 7)

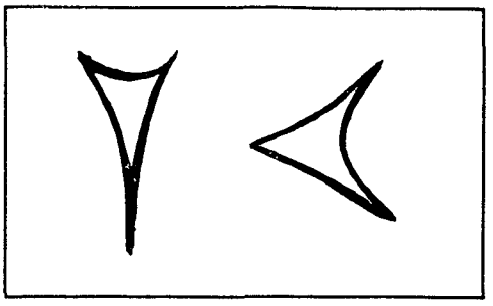

Figure 2-7
Sumerian cuneiform symbols

The numbering system of the Sumerians was unique in that it was not entirely decimal or sexagesimal. They used only two unique symbols, the vertical wedge and cornerwedge, to write any number, which is more indicative of a binary system than either a decimal or a sexagesimal system. Yet, they used these two symbols in combinations so that each number between one and fifty-nine was represented by a unique combination of wedges. Once they reached sixty, the pattern of writing numbers changed, and there was a different representation for numbers sixty and greater. This combination of systems caused difficulties when the Sumerian tablets were first deciphered[17] (Aaboe, 1964, p. 6-7). To illustrate the Sumerian numbering system, one of the tablets that aided in the original deciphering of the numbering system will be used. This illustration is originally found in *The Babylonian Expedition of the University of Pennsylvania, Series A: Cuneiform Texts, Vol. XX, Part 1* and is reproduced in Aaboe, 1964.

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[17]Much of the deciphering of the mathematical tablets was done by Fr. Thureau-Dangin in France and Otto Neugebauer in Germany and America (Boyer, 1968, p. 10). See also Neugebauer (1957) and Neugebauer and Sachs (1945).

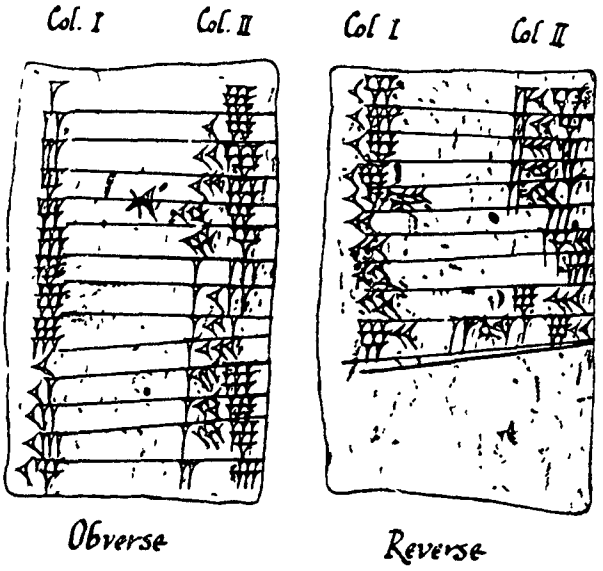

Figure 2-8
Sumerian mathematical tablet (Aaboe, 1964, p. 7)

This figure shows the front and back of a tablet on the left and right of the reproduction, respectively. There are two columns on each side of the tablet, which are labelled Column I and Column II in the reproduction. Each column, counting both sides, has 24 lines. The first entry in Column I is a vertical wedge, the second entry is two vertical wedges, and so forth for the first nine lines. The wedges are grouped in threes, probably to make them easier to read, in the same way that people today draw a slash through four lines to represent a count of five when tallying.

When this tablet was deciphered, the first nine lines of Column I were read as the numbers 1, 2, 3, 4 and so on, and it turns out that this was the correct interpretation. This indicated a decimal system. After the ninth line, there is a new symbol, the cornerwedge. It followed that if the cornerwedge on line ten was read as the number 10, then the next line could be interpreted as 11 (a cornerwedge followed by a vertical wedge). This scheme holds and there are no further difficulties until line

19, located on the reverse of the tablet Cornerwedges and vertical marks seem to be haphazardly arranged However, these appear to be incomplete erasures (Aaboe, 1964, p 7), on other tablets, 19 follows the same pattern as other numbers in the teens The subsequent lines have two, three, four and five cornerwedges which represent 20, 30, 40 and 50

Now, looking at Column II, the first six lines can be interpreted using the same decimal scheme the first line has nine vertical wedges (the number 9), and the second line has one cornerwedge and eight vertical wedges (the number 18) Reading down this column the next four numbers would be 27, 36, 45 and 54, which are the products of the numbers in Column I and nine This suggests the tablet was a multiplication table for 9

It follows that the seventh line in column II should represent the product of seven times nine or 63 which, if written in the same manner as the previous numbers, would be six cornerwedges followed by three vertical wedges However, instead, this line has one vertical followed by three more vertical wedges It would not make sense to read the first vertical wedge as a 1, the only thing that makes sense is to let it mean 60 If the three trailing vertical wedges are added to 60, the expected value of 63 is obtained The following lines can be interpreted in the same way to complete the deciphering of this multiplication table These seven lines would read

Column I	Column I	
7	1, 3 = 1 X 60 + 3	= 63
8	1, 12 = 1 X 60 + 12	= 72
9	1, 21 = 1 X 60 + 21	= 81
10	1, 30 = 1 X 60 + 30	= 90
11	1, 39 = 1 X 60 + 39	= 99
12	1, 48 = 1 X 60 + 49	= 108
13	1, 57 = 1 X 60 + 57	= 117,

which would seem to confirm the table as a multiplication table. The next series of lines all begin with two vertical wedges which would be taken to mean 2 X 60 = 120, and can be interpreted as follows:

Column I	Column II	
14	2, 6 = 2 X 60 + 6	= 126
15	2, 15 = 2 X 60 + 15	= 135
16	2, 24 = 2 X 60 + 24	= 144
17	2, 33 = 2 X 60 + 33	= 153
18	2, 42 = 2 X 60 + 42	= 162
19	2, 51 = 2 X 60 + 51	= 171.

The next line which should represent the product of nine times twenty has three vertical wedges, which, if it represents the product of 9 and 20 (the value in column I), should be interpreted as 180, or 3 times 60. This presented a bit more difficulty for the translators as there was no sign for zero; it was only the context of the arithmetical exercise that suggested these three vertical wedges did not represent the number 3. It was not until almost 300 BCE that two small wedges placed obliquely were used to serve as a placeholder where a number was missing in sequence, like in decimal 202 (Boyer, 1968, 27; Aaboe, 1964, p. 10). Even then, it seems it was only used for intermediate empty positions; there are no tablets in which the zero appears in the terminal position (Boyer, 1968, p. 27). The absence of zero is also noted in line 22 which shows the product of nine times forty as four vertical wedges, which is interpreted as 4 X 60 = 360. This use of a combination of decimal and sexagesimal systems is represented in other deciphered tablets (Aaboe, 1964, p. 9).

School multiplication tables were consistently in this form: two columns, each line in the first column containing a number, which when multiplied by a constant, such as nine in the above example, gave the result which was written in Column II. As with literary texts, students would try to copy the mathematical tables prepared for them

by their teacher An example of such a tablet excavated from Nippur, shows a multiplication table for forty-five completed on one side by the teacher, and separated with a heavy vertical line from calculations in different hand writing It was a "helpless and unsteady" (Aaboe, 1964, p 12) hand that wrote on the right-hand side of the tablet, so it is likely that these were the practice calculations of a schoolchild Although more neatly prepared, the work on the left-hand side was not perfect, instead of one vertical wedge followed by three cornerwedges, the teacher has put two vertical wedges to represent the product of two and forty-five Tablets with multiplication tables for such large numbers as forty-five were not uncommon During this period when multiplications represented a sophisticated technique, the process of multiplication would have been learned by copying over the numbers many times The tablet is shown below The calculations on the right, assumed to be those of the student, were left unfinished The calculations on the left, those of the teacher, contain an error, which was discovered when transcribed Errors by the teachers were not uncommon (Aaboe, 1964, p 12)

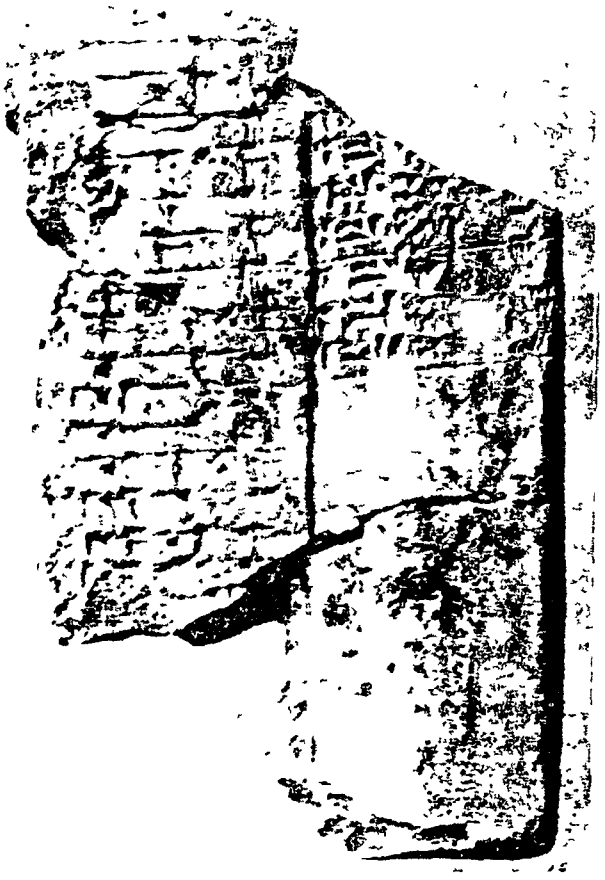

Figure 2-9
Sumerian multiplication table (Aaboe, 1964, p 12)

As well as table texts, there were also problem texts prepared for the students These contained mathematical problems, usually of a similar type, arranged in order of increasing difficulty (Aaboe, 1964, p 23) A problem from a text dating from around 1700 BCE is given here

A tablet shows a square, with the two diagonals drawn such as:

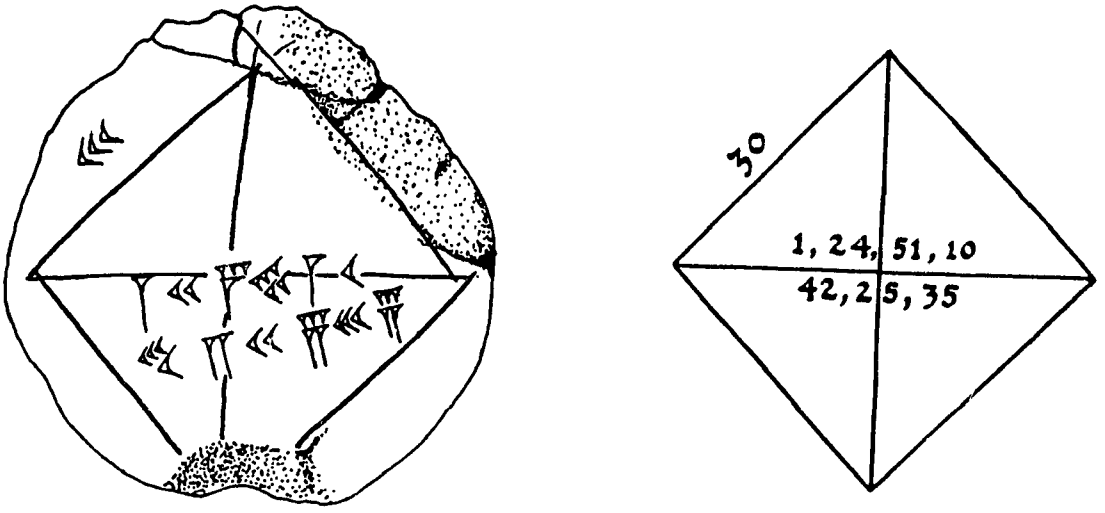

Figure 2-10
A mathematical problem (Aaboe, 1964, p. 27)

Along the side of the square are the three corner wedges which convert to the number 30_{10} which will be called *a*. Inside the square, along the diagonals are written two other numbers which, when the wedges are translated into base ten, are: 305,470 (called *b*) and 152,735 (called *c*). As the diagram shows, the topmost series of wedges (*b*) would be read as the numbers 1 (one vertical wedge), 24 (two corner wedges, followed by four vertical), 51, and 10. In the same way, the lower series of wedges (*c*) would be read as 42, 25, 35.

Before explaining the interpretation of this diagram, it is important to note that, just as there was no character like zero to act as a place holder, the Sumerians also worked without the equivalent of our decimal point to represent fractions. It is surmised that context provided the reader with an indication if the number written was a whole number, or contained a fractional part. That is, just as shifting a digit one position to the left would increase its value by a factor of sixty, moving it one position

to the right divides its value by sixty. Fractions were written simply as numbers in this system and the reader was left with the problem of determining the position of the digits.

In this case, the number called *a*, the number 30 in base ten, or the three cornerwedges, could also be read as a fraction if the three cornerwedges were shifted a position to the right. A one position shift makes the number the equivalent of .5 or ½ in base ten, as thirty is half of sixty.

Reading *a* as ½, then $c = a \times b$. If *a* is taken to mean the measure of the side of the square, and *c* the diagonal, then, by Pythagoras' theorem $c^2 = 2a^2$. Therefore,

$$c = a\sqrt{2}$$

and b should be equal to the square root of 2. If *b* is read with the first digit (the single vertical wedge) as the integer part and the rest of the digits as the fractional component, it would be converted to base ten as $1 + 24/60 + 51/60^2 + 10/60^3 = 1.414212963$ which, when squared, is approximately equal to 2. This indicates that the Sumerians had calculated an excellent approximation to the proper square root of 2.

This tablet also shows that if the side of the square is a = 30 then its diagonal c = 42;25,35, using the semicolon to represent the equivalent of the decimal point in the sexagesimal system. The number *c* in base ten would be

$$42 + 25/60 + 35/60^2 = 42.4264.$$

This corresponds to the length of the diagonal if the side of the square is 30, using Pythagoras' Theorem where $c^2 = 30^2 + 30^2$, or c = 42.4264. From this it appears that the Sumerians were acquainted with some of the aspects of the Pythagorean theorem, some 1200 years before Pythagoras.

Also described on these school tablets were methods for computing areas and lengths, but there are no examples of a theorem or proofs (Aaboe, 1964, p. 29). Instead of proving theorems, the student was exposed to many examples of the same type of problem, and by repetition it was no doubt hoped that he would learn the method to solve these problems.

The Literary

The literary component of the curriculum consisted of copying the literary compositions that began to be written during the latter part of the third millennium BCE. Proverbs and poetry as well as epic poems and essays were included in this group. It was within the edubba that many of the compositions were created.

One example of such a composition seems to bridge the gap between the semiscientific and the literary:

> The shepherd bird says ri-di-id, ri-di-id,
> The shepherd bird has a variegated neck like the dar bird,
> He has a crest upon his head. (Hawkes, 1973, p. 222)

Sumerian proverbs were found on many school practice tablets. It seems that the teacher wrote a proverb on a tablet, and as with other subjects, the pupil was expected to reproduce it. As for the content of the proverbs, a few refer to scribes and the work of the scribes. In a series of proverbs describing ideal candidates for different professions, one is found that deals with scribes although some of the words are undecipherable:

[dub-s] ar(!)-re mu- . . . (?) hé-en-zu(!) [. . .] . (?)
hé-sag$_5$-sag$_5$ e-ne-àm dub-sar-ra

When [a scri]be knows the . . . (?) and does well the . . [?],
he is indeed a scribe!

(Gordon, 1968, p. 200-201)

A proverb that is more easily deciphered is:

dub-sar-su-ka-ta-di-a e-ne-àm dub-sar-ra-àm

A scribe whose hand moves (?) in accordance with the mouth, he is indeed a scribe!

(Gordon, 1968, p. 202)

Another describes those attributes not suited to the scribe:

dub-sar-lú-zú-ra-ah (!) nam-tag-ga-ni ab-gu-ul

A chattering scribe - his guilt is great.

and:

dub-sar-pe-el-lá lú-inim-inim-ma-kam

A disgraced scribe becomes a man of spells.

(Gordon, 1968, p. 210-211)

Another form of texts are known as dialogues (Oates, 1979, p. 167). The writings represented a debate between two contestants about the relative benefits of summer and winter, plough and pickaxe, shepherd and plougher, or date palm and tamarisk, for example (Oates, 1979, p. 167; Lambert, 1960, p. 150). Following the debate, there was generally a judgment, followed by a reconciliation after which the contestants would part on friendly terms (Oates, 1979, p. 167).

Besides contributing to learning and literature, the schools were also instrumental in standardizing the methods of measurement Weights and measures and the symbols used to represent them had to be standardized before they could be of any use

> the system of writing, the numerical notation, and the standardized weights and measures that came into use very early depended upon conventional symbols and units - not only in one city but throughout the country These had to be taught and learned, and by degrees extended As a result, schools, with a priestly personnel in charge of them, became regular adjuncts to the temples The priests not only trained scribes, clerks, and other functionaries, but they also extended and systematized knowledge (Smith, 1955, p 38-39)

TEACHING METHODS

From the school tablets, something can be learned about the method of instruction It seems that the teacher-scribes would write on the tablets and the students were expected to repeat the writings of the scribes, in content and form From these tablets, it can be inferred that copying the master's work was the primary method of teaching There does not appear to be any equivalent of the lecture in the Sumerian classroom, although there is mention of oral work, as will be discussed later

Because of the writing medium, copying would not be a simple task The clay tablets would have had to be kept moist in order for the imprints to be made by the student One would imagine that it would take a few hours to copy the work on a clay tablet This is supported by the pupil's description of his day in the essay reproduced below

Not all tablets were copied in the same way Sometimes the teacher's work was on the front of the tablet, and the schoolchild's copy was on the reverse, in other

cases, the two versions were side by side In his research of Sumerian proverbs, Gordon found that the proverbs were used as material for students to copy on school texts He describes some of the different methods of copying

> a single proverb or a single line (occasionally two lines) from some of the longer "proverbs," inscribed in a clear and careful hand in the upper part of the obverse (the plane side), and repeated in a different and quite frequently, a poorer hand on the lower half of the same side, reverse uninscribed (Gordon, 1968, p 7)

Other tablets contained the professor's copy on the front of the tablet, and the student's copy on the reverse In other cases, the tablet was divided into two vertical portions, with the better handwriting on the left and the poorer version on the right

Still another form of the tablets shows "several proverbs written in a single handwriting which is rather poor, covering the entire obverse of the tablet, the reverse is uninscribed" (Gordon, 1968, p. 8). This suggests that schoolchildren might have been expected to memorize and write out the proverbs rather than just copy them In the case of the proverbs, many of which describe the attributes of the scribe and the moral standards of society, such as the ones given on page 67 It may be that the content was considered as important a lesson as learning to write

There does not appear to be any consistency in the method of writing on the tablets, although in most cases the writing of both the professor and student were found on the same side of the tablet In those instances when the professor wrote on one side, and the student on the other, the ability of the student to copy the work must have been impeded Whether or not this method was for purely practical reasons, such as the length of the composition, is not clear The student might have been

expected to reproduce the teacher's work without looking at it for the purposes of testing, or the teacher might have written the correct form after the student had attempted the exercise In any case, most of the school tablets show the two pieces of writing on the same side of the tablet

THE STUDENTS

Who were the students? The majority, as might be expected, were from wealthy families It was important that the family of the student had the means to contribute to the finances of the school, as the teacher-scribes were paid from the tuition fees collected from the students The scribes were usually employed within the temples, yet the tuition contributed to their salaries

The best information about the students comes from work done in the late 1940's and 1950's by a German cuneiformist, Nikolaus Schneider Schneider went through thousands of economic and administrative documents which dated back to around 2000 BCE On these tablets were the names of five hundred scribes, and for many, along with their name was listed the name of their father and their father's occupation

Schneider found that for the most part the fathers of these graduate scribes were scribes, governors, city fathers, accountants, sea captains and priests - the wealthiest and most prominent citizens of Sumer (Kramer, 1963, p 231) It has been documented that in the rare instance, a student was sponsored by a beneficiary (Hawkes and Woolley, 1963, p 662) but this would seem to be an exception For the most part, education was reserved for the upper, wealthy class

Royalty might also have attended school on occasion, Ur-Nammu's son Shulgi boasted of attending the edubba in his youth (Hawkes, 1973, p 216) In a hymn written to glorify King Shulgi, who came to rule around 2000 BCE, there is a brief passage describing his upbringing

> During my youth there was the edubba where
> On the tablets of Sumer and Akkad I learned the scribal art,
> No youth could write as well as I on clay,
> I was instructed in the learned places of the scribal art,
> I am accomplished in subtraction, addition counting, and accounting,
> The gracious Nanibgal, the goddess Nidaba,
> Has given me generously of wisdom and understanding,
> I am a dextrous scribe whom nothing impedes
> (Kramer, 1979, p 63)

From this passage, it appears that the king was well educated Notwithstanding that the hymn was written to magnify the king, the passage not only indicates that at least some royalty were educated, but mentions some of the subjects of study

There were only one name identified as that of a woman on Schneider's documents (Kramer, 1963, p 231) It was originally believed that only boys attended the schools and became scribes However, it has been suggested that Sumerian names were given to both men and women, so the sex of almost all the individuals in these texts cannot be determined with certainty (Van De Mieroop, 1987, p 57) And, it has been determined that there were a few literate women and women scribes Enheduanna, the daughter of Sargon the Great (c 2300 BCE) wrote a series of poems around 2350 BCE in praise of the temples of Sumer (Jacobsen, 1987, p xi) However, whether or not women attended schools is still unclear It has been suggested that women scribes may have received their education in some place other

than the classroom, it could be their brothers passed on to them their day's lessons when they returned from school or that a few girls had private tutors (Hawkes, 1973 p 214) This may be a conclusion based on a notion that gender equality is a relatively modern concept rather than on archaeological evidence, especially given the fact that many Sumerian names were given to both boys and girls

THE SCHOOL STAFF

The head of the school was called the "ummia" or expert, which also translates as "school father" (Hawkes and Woolley, 1963, p 662) The name for a pupil translates as "school son," and the name for alumnus translates as "school-son of days past" (Kramer, 1963, p 232) The primary assistant to the ummia was known as "big brother" This scribe was responsible for writing the new tablets for the student to copy as well as examining the copied work Sometimes students gave recitations, and the assistant would listen to the work of the students

There were other scribes responsible for specialized instructions such as in mathematics and literature In addition there is mention of "the man in charge of drawing," "the man in charge of the whip" and "the man in charge of school regulations" (Hawkes and Woolley, 1963, p 662) Hawkes suggests that the graduates who stayed on at the schools as big brothers may have "tended to be poorer and of humbler origin" than their pupils, and this may have caused insubordination by the students (Hawkes, 1973, p 216)

Although school was attended "from the time of childhood to maturity" (Hawkes and Woolley, 1963, p 662), the rôle of the student would change during the school career After about two years of schooling the student might become a 'dubsar

tul', or a junior scribe Junior scribes would help in teaching the younger students, and sometimes might also administer punishment Discipline was strict in the Sumerian schools Punishment sometimes consisted of copying lines of writing, fifty or one hundred lines of prose, but the norm was some form of corporal punishment A graduate wrote that during one day he was caned at least nine times, "his offenses ranging from talking without permission to loitering in the street" (Kramer, 1967, p 123)

THE SCHOOL DAY

An essay written by a schoolteacher who lived about 2000 BCE gives a description of the school day The essay was pieced together from twenty-one tablets and fragments It is fortunate for us that numerous copies of each literary work (including this essay) were prepared, many of them by teachers and many more copied by students for practice (Kramer, 1954, p 139-141) It is the method of copying texts that has preserved much of the literary output of the Sumerians

The tablets from which the essay was pieced together were excavated in two cities Ur, where Sir Leonard Woolley led the expeditions, and from Nippur, located about one hundred and sixty kilometres from modern Baghdad Kramer warns that

> in spite of the more complete text now available, much of the meaning of the essay and not a few of its implications are still quite uncertain, since many of the passages are only partially preserved (Kramer, 1963, p 241)

The essay begins with a conversation between an alumnus and a teacher The following translation comes from Kramer (1981) and Kramer (1963) Ellipses indicate

where the lines on the tablets are unintelligible and cannot be translated, and any translations which Kramer says are questionable, are indicated

The teacher begins with a question to the graduate

> Schoolboy, where did you go from the earliest days?
> I went to school
> What did you do in school?
> I recited my tablet, ate my lunch, prepared my (new) tablet, wrote it, finished it, and then they assigned me my oral work, and in the afternoon they assigned me my written work When school was dismissed, I went home, and found my father sitting there I told my father of my written work, then recited my tablet to him, and my father was delighted, (so much so) that I attended him (with joy)

Kramer presumes that the next words were spoken by the schoolboy to servants

> I am thirsty, give me water to drink I am hungry, give me bread to eat, wash my feet, set up (my) bed, I want to go to sleep Wake me early in the morning, I must not be late lest my teacher cane me

The alumnus then continues with his description of the school day

> When I awoke early in the morning, I faced my mother and said to her "Give me my lunch, I want to go to school " My mother gave me two rolls and I set out, my mother gave me two rolls (sic), and I went to school In school the fellow in charge of punctuality said "Why are you late?" Afraid and with pounding heart, I entered before my teacher and made a respectful curtsey

The essay continues with a description of the punishment meted out to the student

> My headmaster read my tablet, said
> "There is something missing," caned me
>
> The fellow in charge of neatness (?) said
> "You loitered in the street and did not straighten up (?) your clothes (?)," caned me
>
> The fellow in charge of silence said
> "Why did you talk without permission," caned me
> The fellow in charge of the assembly (?) said
> "Why did you 'stand at ease (?)' without permission," caned me
> The fellow in charge of good behaviour said
> "Why did you rise without permission," caned me

> The fellow in charge of the gate said:
> "Why did you go out from (the gate) without permission," caned me.
> The fellow in charge of the whip said:
> "Why did you take . . . without permission," caned me.
> The fellow in charge of Sumerian said:
> "Why didn't you speak Sumerian," caned me.
> The teacher said:
> "Your hand is unsatisfactory," caned me,
> (And so) I (began to) hate the scribal art, (began to) neglect the scribal art.
> My teacher took no delight in me; (even) [stopped teaching (?)] me his skill in the scribal art; in no way prepared me in the matters (essential) to the art (of being) a "young scribe," (or) the art (of being) a "big brother."

The schoolboy then turned to his father, saying:

> Give him a bit extra salary, (and) let him become more kindly (?); let him be free (for a time) from arithmetic; (when) he counts up all the school affairs of the students, let him count me (too among them; that is, perhaps, let him not neglect me any longer).
>
> To that which the schoolboy said, his father gave heed. The teacher was brought from school, and after entering the house, he was seated on the "big chair." The schoolboy attended and served him, and whatever he learned of the scribal art, he unfolded to his father. Then did the father in the joy of his heart say joyfully to the headmaster of the school: "My little fellow has opened (wide) his hand, (and) you made wisdom enter there; you showed him all the fine points of the scribal art; you made him see the solutions of the mathematical and arithmetical (problems), you (taught him how) to make deep (?) the cuneiform script (?).
>
> Pour for him irda-oil, bring it to the table for him. Make fragrant oil flow like water on his stomach (and) back; I want to dress him in a garment, give him some extra salary, put a ring on his hand.

The teacher then speaks to the schoolboy:

> Young man, (because) you hated not my words, neglected them not, (may you) complete the scribal art from beginning to end. Because you gave me everything without stint, paid me a salary larger than my efforts (deserve), (and) have honoured me, may Nidaba, the queen of guardian angels, be your guardian angel; may your pointed stylus write well for you; may your exercises contain no faults. Of your brothers, may you be their leader; of your friends may you be their chief; may you rank the highest among the schoolboys, satisfy (?) all who walk (?) to and from in (?) the palaces. Little fellow, you "know" (your) father, I

> am second to him; that homage be paid to you, that you be blessed - may the god of your father bring this about with firm hand; he will bring prayer and supplication to Nidaba, your queen, as if were a matter for your god. Thus, when you put a kindly hand on the . . . of your teacher, (and) on the forehead of the "big brother," then (?) your young comrades will show you favour. You have carried out well the school's activities, you are a man of learning. You have exalted Nidaba, the queen of learning; O Nidaba, praise!

From this essay, it can first of all be concluded that children attended school at a young age, from the "earliest days." Much has been said about the written work required of the students but this essay also tells of the student reciting the tablet. It is in the first section of this essay that the oral component of the schoolwork is described.

Sumerian scholars have been primarily interested in the decipherment of the tablets, and the stories that they tell. Much went on in schools which was not writing, however. This essay presents proof of what would be expected. The ri-di-id of the shepherd bird (from the essay given on page 22) would have to be spoken to be understood and one can imagine groups of schoolchildren joining in the bird song. This piece would not have been written if not to be said aloud.

The schoolboy recited his work to his father, who showed an interest in the child's progress, a sign that the value of education was appreciated by the boy's parent.

The next part of the essay describes a very strict school day, punctuated by severe discipline by the scribes. The essay indicates that in addition to the headmaster, there were others in charge of many aspects of the school day: punctuality, neatness, and silence, for example. These may have been junior scribes or older pupils appointed by the teacher.

One especially interesting dialogue occurs between the pupil and the "fellow in charge of Sumerian" The boy was punished for not speaking Sumerian By the time this essay was written, the Sumerian language had become the language of learning and culture, and Akkadian was widely spoken Sumerian would have been as Latin was in medieval universities in Europe

> From Sargonid times onwards more and more of the students would have spoken Akkadian and had to learn Sumerian as an academic language For this purpose bilingual lists of words and phrases were prepared - the first time anything approaching a lexicon had ever been devised There were also quite advanced grammatical texts for reading Sumerian syntax (Hawkes, 1973, p 217-218)

After having fallen out of favour with his teacher, the student asks his father for help A bit of relaxation and an increase in salary were presented to the teacher, who responded with praise for the student We would expect the canings to abate

Another essay recounts a dialogue between father and son The essay was pieced together from "more than a score of tablets and fragments" (Kramer, 1963, p. 243) and turns out to be about one hundred and eighty lines long Kramer also notes that it is

> one of the first documents in the history of man in which the word "humanity" (Sumerian, namlulu) is used not only to designate mankind but in the sense of conduct and behaviour befitting human beings (Kramer, 1963, p 243)

Kramer, writing in the sixties, probably intended no gender bias by these remarks No doubt he meant his reader to understand that he was writing of the history of human

beings in general and of human kind, as were the Sumerians The Sumerian language does not distinguish grammatically between masculine and feminine (Van De Mieroop, 1987, p 66) and the names were used interchangeably for males and females Perhaps gender bias is a fault of the translators rather than the Sumerians Indeed, the use of the word mankind instead of humanity (as used in the following essay) would not s- '- be an artifact of the Sumerian language

The essay begins with the father asking his son a question

> Where did you go?
> I did not go anywhere
> If you did not go anywhere, why do you idle about? Go to school, stand before your 'school-father', recite your assignment, open your schoolbag, write your tablet, let your 'big-brother' write your new tablet for you After you have finished your assignment and reported to your monitor, come to me, and do not wander about in the street Come now, do you know what I said?
>
> I know, I'll tell it to you
>
> Come now, repeat it to me
>
> I'll repeat it to you
>
> Tell it to me.
>
> I'll tell it to you.
>
> Come on, tell it to me
>
> You told me to go to school, recite my assignment, open my schoolbag, write my tablet, while my 'big brother' is to write my new tablet After finishing my assignment, I am to proceed to my work and to come to you after I have reported to my monitor That's what you told me
>
> Come now be a man Don't stand in the public square, or wander around the boulevard When walking in the street, don't look all around Be humble and show fear before your monitor When you show terror, the monitor will like you
>
> [About 15 lines destroyed]

You who wander about in the public square, would you achieve success? Then seek out the first generations. Go to school, it will be of benefit to you. My son, seek out the first generations, inquire of them.

Perverse one over whom I stand watch - I would not be a man did I not stand watch over my son - I spoke to my kin, compared its men, but found none like you among them.

What I am about to relate to you turns the fool into a wise man, holds the snake as if by charms, and will not let you accept false phrases. Because my heart had been sated with weariness of you, I kept away from you and heeded not your fears and grumblings - no, I heeded not your fears and grumblings. Because of your clamorings - I was angry with you - yes, I was angry with you. Because you do not look to your humanity, my heart was carried off as if by an evil wind. Your grumblings have put an end to me, you have brought me to the point of death.

I, never in all my life did I make you carry reeds to the canebrake. The reed rushes which the young and the little carry, you, never in your life did you carry them. I never said to you 'Follow my caravans.' I never sent you to work, to plow my field. I never sent you to work to dig up my field. I never sent you to work as a labourer. 'Go, work and support me,' I never in my life said to you.

Others like you support their parents by working. If you spoke to your kin, and appreciated them, you would emulate them. They provide 10 *gur* (72 bushels) of barley each - even the young one provided their fathers with 10 *gur* each. They multiplied barley for their father, maintained him in barley, oil, and wool. But now, you're a man when it comes to perverseness, but compared to them you are not a man at all. You certainly don't labour like them - they are the sons of fathers who make their sons labour, but me - I didn't make you work like them.

Perverse one with whom I am furious - who is the man who can really be furious with his son - I spoke to my kin and found something hitherto unnoticed. The words which I shall relate to you, fear them and be on your guard because of them. Your partner, your yokemate - you failed to appreciate him; why do you not emulate him? Emulate your older brother. Emulate your younger brother. Among all mankind's craftsmen who dwell in the land, as many as Enki (the god of arts and crafts) called by name (brought into existence), no work as difficult as the scribal art did he call by name. For if not for song - like the banks of the sea, the banks of distant canals, is the heart of song distant - you wouldn't be listening to my counsel, and I wouldn't be repeating to you the wisdom of my father. It is in accordance with the fate decreed by Enlil for man that a son follows the work of his father.

I, night and day am tortured because of you Night and day you waste in pleasures You have accumulated much wealth, have expanded far and wide, have become fat, big, broad, powerful, and puffed But your kin waits expectantly for your misfortune, and will rejoice at it because you looked not to your humanity

[Here follows an obscure passage of 41 lines which seems to consist of proverbs and old saws, the essay then concludes with the father's poetic blessing]

From him who quarrels with you may Nanna, your god, save you,
From him who attacks you may Nanna, your god, save you,
May you find favor before your god,
May your humanity exalt you, neck and breast,
May you be the head of your city's sages,
May your city utter your name in favored places,
May your god call you by a good name,
May you find favor with your god Nanna,
May you be regarded with favor by the goddess Ningal

(from Kramer, 1981, p 15-17 and Kramer, 1963, p 243-46)

Again, in this second essay, the schoolboy describes reciting his assignment, suggesting the oral tradition was evident in his classroom The father advises his son to "show fear before your monitor", and as in the first essay discipline seems to be severe and the father wants the teachers to like his son

The son seems to have disappointed his father with his efforts at the school, and the father advises him to apply himself to his learning The son has been given many special considerations and has not been asked to perform the physical work of his brothers and peers Scribal learning is described as difficult, but it provides a lofty position in society to its graduates These two essays describe the school day in much the same way· it was rigorous, discipline was strict, the student recited his work, and copied his tablets, and hoped by gaining the teachers' favours to ensure his success

From these essays the school day would seem to be long. The student had six days each month when he did not have to attend school: three holy days and three free days (Kramer, 1981, p. 8, 351; Kramer, 1967, p. 123). A tablet written by a student from the city of Ur describes the days off from school. From the writing, the student obviously does not consider the holy days, or festival days, in the same category as the "days of freedom":

> The reckoning of my monthly stay in the tablet house is:
> My days of freedom are three per month.
> Its festivals are three days per month.
> Within it, twenty-four days per month . . . ..
> They are long days. (cited in Hawkes, 1973, p. 215).

Once a student reached a certain stage, he would be expected to complete an examination (Oates, 1979, p. 164). From the form of the tablets it has been surmised that

> there were different grades within the scribal profession, some being only capable of producing contracts or letters, while those at the top could deal with difficult literary or religious texts. (Hawkes, 1973, p. 218)

Having graduated, the student would enter the profession of scribe. The number of scribes who had received training in the Sumerian edubba "ran into the thousands"[18] by the middle of the third millennium (Kramer, 1963, p. 230). By the

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[18]To give an idea of the percentage of the population trained as scribes, it is estimated that the population of Sumer in 2500 BCE was over 500,000, and we know that in 2700 BCE, one of the largest cities was Uruk which had a population of about 50,000 as well as 76 outlying villages (Constable, 1987, p. 21; Adams, 1960, p. 193).

time Hammurabi completed his conquest of the region around 1760 BCE, and established the capital city of his empire at Babylon, scribal training may have been even more common Not all scribes had the same capabilities, responsibilities or prestige There were

> junior as well as "high" scribes, scribes who were highly specialized for particular categories of administrative activities, and scribes who became leading officials in government (Kramer, 1981, p 4)

The word 'scribe' seems to have been used to refer to anyone who was literate, although the profession of the scribe was somewhat different That is, many citizens were considered scribes - doctors and administrators and others who could read and write It seems that all priests would have been scribes of some stature, but not all scribes, regardless of their expertise, would be considered for the priesthood "Some were disqualified from holding office in the temples by physical imperfections", for example (Hawkes, 1973, p 219) Oates suggests that some priests, judges and governors were illiterate (Oates, 1979, p 163), a situation that may have changed as the edubba became more commonplace There was also the professional scribe, as implied by the use of the word scribe in the list of fathers' professions on the tablet translated by Nikolaus Schneider Even within the professional designation, there were different areas of service

> The main openings were in commerce and the service of the temple, the palace and law courts Every important official had a personal secretary on whom he depended Scribes also accompanied all military expeditions, writing dispatches, listing prisoners and booty, working in the quartermaster's office Very many, perhaps of the less

> academic type, became what might be called estate managers and accountants for well-to-do landowners (Hawkes, 1973, p 219)

So I think the classroom played a vital rôle in the fabric of Sumerian society It was a training place for young children of wealthy families, a disciplinary environment for civil servants, priests, middle and upper managers and even on occasion, princes Parents took an interest in their children's life at school, and the children themselves worked hard and long at recitation, arithmetic and geometry Excavations suggest the classroom contained benches and that the writing was on clay tablets We are fortunate to have school essays preserved on those clay tablets which shed light on the human side of the life within the school walls Let us now turn to the classrooms of ancient Egypt and see what kind of picture of school life emerges there

Chapter 3: Education in Ancient Egypt

At the same time that the Sumerians were developing their schools, the Egyptians were beginning to think about the education of their children There are many parallels between the developments in the two areas as well as similarities between the geography of the regions Just as the Sumerian civilization developed in response to the agricultural surplus afforded by the fertile valley between the Euphrates and Tigris rivers, the Egyptians were dependent on the Nile The predictability of the yearly flooding of the Nile allowed irrigation and crop rotation The irrigation not only provided plentiful crops but required cooperation among the people As in Sumer, this agricultural surplus and collective effort created a need for an organizational bureaucracy which would be managed by the scribes In addition, the Egyptians were able to enjoy a certain amount of leisure because of the bounty provided by the irrigated land

The Egyptian civilization has been called the "second great civilization" (Constable, 1987, p 55) while the Sumerians are credited with being the first Although developments in Egypt followed those in Sumer very quickly, sometimes by a few centuries or less, it was always the Sumerians who were the leaders It is the fact that the Egyptians borrowed many of their ideas from the Sumerians that gives rise to the label of second great civilization It is well known that the trade and migration which occurred from Sumer to Egypt provided the Egyptians with the ideas and technology for the use of wheeled vehicles and irrigation The Egyptian system of writing contains elements of the Sumerian writing system, and the Egyptian school has many similarities with its Sumerian counterpart However, there are differences,

and the material on which the Egyptians wrote is one difference which influenced developments in the Egyptian school system. The Egyptians used papyrus.

Many of the developments in Egypt owe their origins to the Sumerians. It has been said that the Egyptians were characterized by their willingness to cling to what worked without trying to improve upon the ideas brought to them by the Sumerians (Hawkes, 1973, p. 442). This is shown by their preoccupation with practical problems in mathematics rather than a desire to study the subject for the sake of knowledge. They lagged behind the Sumerians not only in their knowledge of mathematics but also in astronomy, although their knowledge of medicine seems to have been well developed as demonstrated by their expertise in mummification. The practice of mummification encouraged handling of the corpse, and knowledge, albeit imperfect, of its parts, was gained. This knowledge was used in developing surgical procedures and medical treatments.

As in Sumer, there are examples of women in Egypt being involved in the administration of the cities, although the rôle of women in the classroom is rarely mentioned in the documents or the histories of ancient Egypt. In documents dating to the Old Kingdom (2686-2181 BCE), women were given titles implying a degree of authority (inspector, overseer of the chamber of wigs, overseer of doctors) (Fischer, 1987, p. 16-19) and were able to possess property. In wealthy households, men were waited upon by men, and women were waited upon by women, although in the latter case, women had male rather than female scribes. This was the case for Ueen Mersyankh III, a wealthy woman of the Old Kingdom, who had a considerable entourage of women, but her scribe was a man (Fischer, 1987, p. 14-15). The princess Hemet-Re, in one of Hassan's tombs at Giza, likewise had a male steward

as well as a number of male scribes, and, exceptionally, had no female attendants at all The absence of female scribes is conspicuous and the lack of available scribal training for women could explain why they were not involved in the governmental bureaucracy to an appreciable extent (Fischer, 1987, p 23-24)

During the Middle Kingdom (2030-1786 BCE), four women scribes are depicted on funerary stela and in burial chambers (Ward, 1987, p. 35) No other depiction of female scribes is found in the art of Egypt This is perhaps because the Egyptian art to which we have the greatest access are burial chamber pictures which were prepared for the upper class in Egypt. The scribal elite was male dominated throughout the history of Egypt (Robins, 1987, p. 105) The documents examined in this study seem to have a decidedly male perspective although this may be partially attributed to the translators, the Egyptians commonly used the word people, not mankind (Fischer, 1987, p. 24)

The study of the Egyptian school begins shortly after the unification of communities on the Upper and Lower Nile. The consolidation began around 3500 BCE, and by 3000 BCE Egypt was ruled by a single ruler marking the first dynasty of the Pharaohs. Twenty-nine dynasties would follow before Egypt fell to the Greeks under Alexander in 332 BCE

THE CLASSROOM

Most schools in Egypt were associated with temples, although there were also schools within the pharaoh's court. In addition, government departments provided some training to those who would expect to find employment within their branches. These schools seemed to operate on an apprentice basis, providing very specific

training. Government schools probably developed during the New Kingdom, around 1530-1050 BCE. The temple and court schools existed as early as the Old Kingdom (around 2700-2300 BCE) and had been firmly established by the Middle Kingdom (2050-1775 BCE).

Many Egyptian temples are still standing, the two most famous being the temples of Karnak and Luxor in the present day city of Luxor. In the temples that are still standing, there is no room that was obviously used as a classroom. In these temples, the purpose of the rooms is often apparent because many of the rooms have engraved pictures on the walls showing what activities took place within the room. For example, one room at the Luxor temple which I visited in 1988, shows the birth of a baby, and was reserved for childbirth. At these temples there are no pictures showing groups of children being taught how to write as might be expected, or any other activities that might be associated with schooling. Although the temples are well preserved, many of the outer buildings associated with the temple were made of brick and have disappeared. It could be that the classrooms were located in these outer buildings.

At the temples there are many courtyards, large and small, that are often connected to what would have been the priests' quarters. Around these courtyards there were servant's rooms and offices. As the primary purpose of the temple schools was to teach the child to become a scribe, to learn to write, it could be that the children were instructed close to where these activities were performed, either outdoors in the courtyard or in any of the small rooms located off the courtyard.

After receiving preliminary education within the temple school, some Egyptian schoolchildren would attend specialized schools to prepare them for their future

professions (Erman, 1971, p. 329). There were special schools for those students who would enter the priesthood, just as there were for those who would become government officials (Erman, 1971, p. 329; Montet, 1958, p. 280). A child's future profession was most often decided on the basis of hereditary (Montet, 1958, p. 280).

In addition to the temple schools and specialized government schools, there were also classrooms within the royal palace (Erman, 1971, p. 77; Jackson, 1981, p. 20). If a child was of royal birth, his education would take place within the palace. However, young princes were not the only children educated at the palace. The sons of concubines and of noble families were also educated with the princes (Kamil, 1977, p. 48) and in some cases, the king allowed the children of hostages to be educated at the palace court. Sometimes the criteria for attendance at the royal court was seemingly even more personal: during the nineteenth dynasty of the New Kingdom (1575-1085 BCE) there was a tradition that all the children born on the same day as the heir were to be brought up with him (Petrie, 1923, p. 125). It seems that the practice of allowing other boys access to the royal school began early in Egyptian history.

> There was a pretty custom in the time of the Old and Middle Empire: the king allowed other boys to be educated at court with his own sons . . . .. It was the same under the Middle Empire, for a monarch of Siut relates with pride how he had received swimming lessons with the royal children, and a high officer of the palace boasts that as a child "he had sat at the feet of the king, as a pupil of Horus, the lord of the palace." (Erman, 1971, p. 77-78)

(Names of gods, such as Horus the sun-god, were given both to kings and to royal servants. In the above passage, Horus was a name given to the tutor of the royal

children (Erman, 1971, p. 77, p. 290 note)). The number of people living within the palace, and attending school there, grew so that the term "royal relative" in Egyptian writing came to mean any person brought up within the palace, and not necessarily a blood relative. (Erman, 1971, p. 77).

Despite the fact that the actual classrooms are not obvious, the Egyptians have left some information about their schools in their writings and pictures. The school books of the children are a source of information about the Egyptian classroom and the activities that occurred there.

SCHOOL TEXTS

One of the most pronounced differences between the schools of Sumer and those in Egypt is the material used by the students and teachers for writing. The Sumerian schoolchildren and the scribes wrote on clay tablets. These tablets were awkward to use and had to be kept moist while being written upon. In Egypt, the most common writing material was papyrus, which, in contrast with clay, was light and easy to write on. Papyrus was expensive, however, and many schoolchildren had to practice their writing on cheaper materials such as fragments of limestone or pottery before being given a sheet of papyrus on which to write. However, even these less expensive materials were easier to use than the Sumerian clay tablets.

Although other materials were used for writing, it is the use of papyrus that characterizes much of the literature of the Egyptians. Light, lyrical love poems were more typical of Egyptian literature than the epic poetry of the Sumerians. Papyrus had been used early in Egyptian history; it was found in a First Dynasty tomb, dating to around 3000 BCE. This piece of papyrus did not contain any writing, but is clear that

the Egyptians were writing on papyrus by the late Fifth Dynasty, around 2300 BCE (James, 1979, p. 93; Constable, 1987, p. 46). Account lists, written on papyrus, have been found dating to this period.

Although papyrus reeds were plentiful along the banks of the Nile, papyrus sheets were costly. This was partly due to the fact that its production and sale had always been subject to royal monopoly (Jackson, 1981, p. 22), so it was to the pharaoh's advantage to keep the supply low or otherwise prices might drop. The production of papyrus from the reeds was also a time consuming process.

> Fresh green stems of the plant were cut into suitable lengths and the green rind stripped off. They were then cut into thick strips and laid parallel to each other and slightly overlapping on absorbent cloth. A similar layer was laid above and across them and the whole covered by another cloth. This was hammered with a mallet for about two hours and the sheets welded into a single mass which was finally pressed and dried. Sheets were fastened to each other to make rolls, in some cases of great length. (Innis, 1972, p. 16)

The papyrus was light and durable, and easier and lighter to hold than the clay tablets of the Sumerians. It could also be transported and scribes may have had specially designed satchels to carry their papyrus and supplies when they travelled (Johnson, 1978, p. 162). They are shown in the following picture carrying tablets and papyrus.

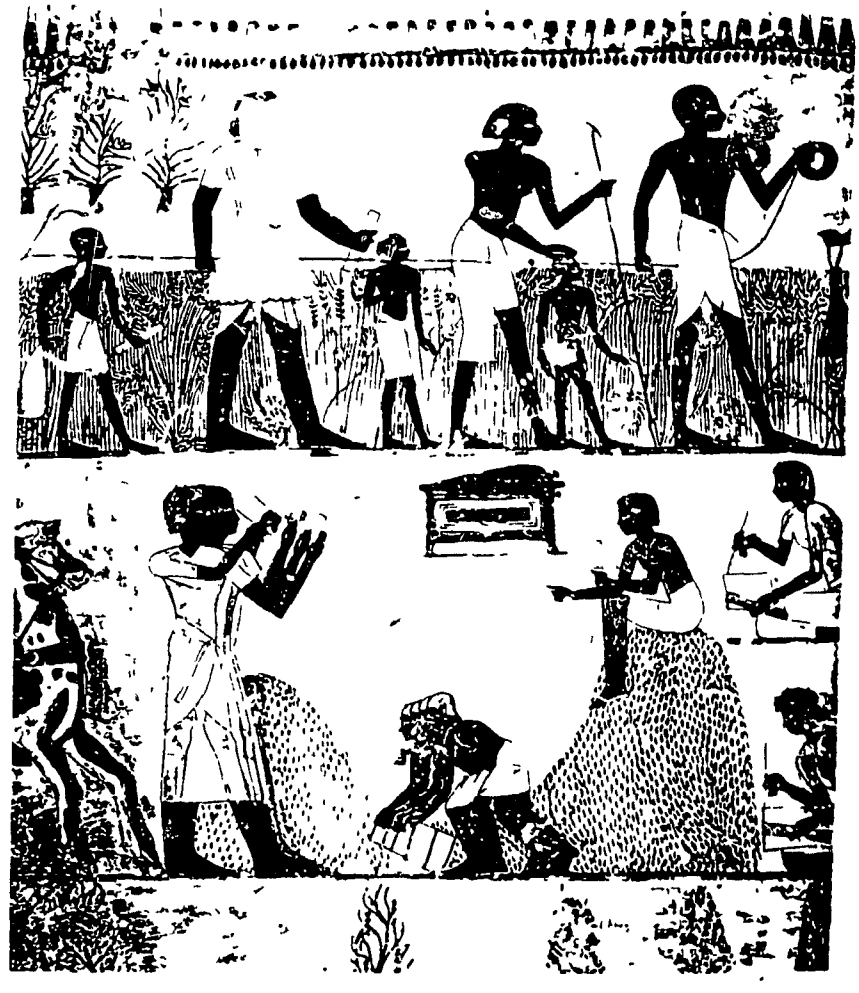

Figure 3-1
Scribes carrying their tools to work in a field (Johnson, 1978, p 103)

Some of the mats of papyrus were left uncut and the scribes were left to work with large rolls of the material The Rhind[19], or Ahmes Mathematical Papyrus dating to around 1650 BCE (but perhaps a copy of an earlier version created 1000 years

[19]The Rhind papyrus was bought by a Scottish antiquary, Henry Rhind, in 1858 in a resort town along the Nile. Its alternate name, the Ahmes papyrus is after the scribe who copied it. The papyrus is located in the British Museum, except for a few fragments in the Brooklyn Museum (Boyer, 1968, p. 11).

earlier (Boyer, 1968, p. 11, Bowen, 1972, p. 37)) was originally a single roll, eighteen feet long and thirteen inches high (Constable, 1987, p. 47). The sheet would be rolled as it became full of writing, and when completely covered, it would be rolled up, tied, and sealed. The rolls were then made into bundles which were put into leather cases and stored in special cupboards found in offices and temples (Montet, 1958, p. 29). The scribes had no need of desks; they either sat on the floor with the roll of papyrus on their knee, or held it unrolled in their left hand and wrote standing. There exist many pictures of scribes in these positions, showing how they held the papyrus while writing upon it.

Figure 3-2
Scribes at work (Reeves, 1990, p. 166)

Despite the abundance of papyrus, its cost prevented its widespread use by schoolchildren. Children started out with less costly materials or reused the sheets of papyrus once they had been cleaned. Fragments of limestone fragments and

pieces of broken pottery were used as a writing surface for the students' sketches and rough notes and even these were sometimes washed over and reused (Jackson, 1981, p. 22). Sometimes the limestone slabs were polished and "ruled with lines or squares" (Montet, 1958, p. 255), perhaps to assist the young student in forming the written characters neatly.

Later, the Greeks also wrote on pieces of pottery, calling them 'ostraca'. The name 'ostraca' came from the practice of advisory councils in Athens holding secret ballots to decide upon the names of citizens who had become too powerful or dangerous. Names were written on pieces of pottery and placed in the mouth of an urn. If anyone's name was found too frequently on the pottery, he was ostracised: banished from Athens for ten years (Jackson, 1981, p. 35). The same word is used by Egyptologists.

In addition to limestone and pottery, schoolchildren also used wooden boards covered with a thin layer of white plaster. This gesso-like material which covered the boards could be written on, then washed off and the board replastered to permit another attempt at writing (Jackson, 1981, p. 22; Johnson, 1978, p. 160). Some of these white wooden boards had small holes in them, and it has been speculated that the holes were designed for leather thongs by which the boards could be hung from pegs in the wall when not in use (James, 1979, p. 94).

Within the palace schools, the pupils may have used papyrus for their exercises and even within the temple schools, older, more accomplished students may have been given their own papyrus.

> When he had spoiled enough of this cheap material the schoolboy - promoted thereby to the status of student - was allowed to use a whole lovely new papyrus to copy, no mere extract, but a complete work. He would kneel down and unroll an area of the virgin papyrus equal to a page of the model. He had already prepared his red and black inks and selected the appropriate size of reed pen from his pen-case: and he now began to copy a story or a moral or poetical work or some model letters. Titles and chapter headings were written in red ink and the ordinary text in black. Every scribe, however, was also both draughtsman and painter and used green, blue, yellow or white inks for illuminating his texts. (Montet, 1958, p. 255-56)

It is known that Tutankhamen used papyrus during his school days. In his tomb were found an abundance of writing materials, presumedly because the king was to become scribe to the sun-god in death, according to the Pyramid texts (Reeves, 1990, p. 166). Some of the materials were the private writing materials of the king. Included in the findings were a piece of fine sandstone that was used as an eraser for the sheets of papyrus and a "smoother" or "burnisher" (Reeves, 1990. p. 166; Desroches-Noblecourt, 1963, p. 148) which was used to restore the surface of the papyrus after it was erased. The eraser was kept in a "small leather bag with a drawstring top" (Desroches-Noblecourt, 1963, p. 148). Palettes used by scribes were also discovered, and are shown in the following illustration.

The palette on the left is made of ivory, the right of wood. Each has two ink pots for red and black ink and a selection of reed pens. Some of these "pencil boxes" had sliding wooden covers (Johnson, 1978, p. 162). In the centre of the picture is a burnisher and a pen case (Reeves, 1990, p. 166).

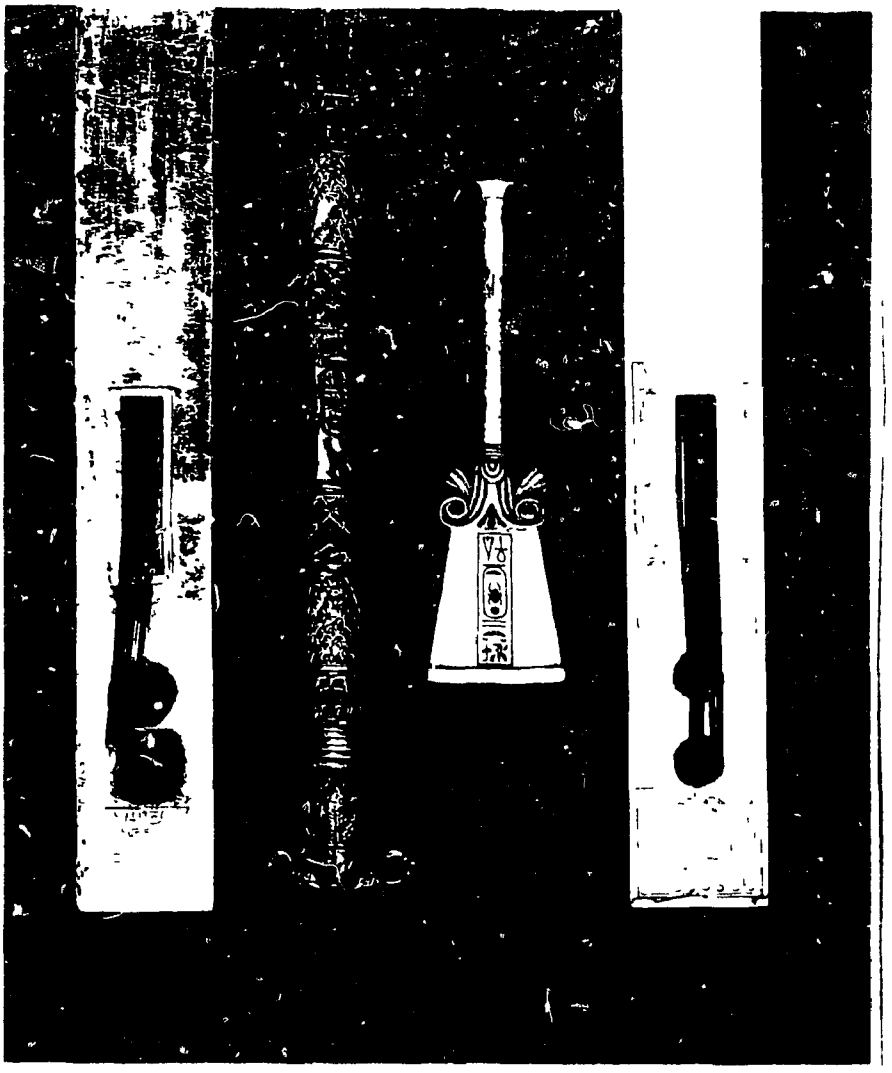

Figure 3-3
A scribe's tools (Reeves, 1990, p. 166)

At the tomb, various pigments were also found in black, white, red, yellow and blue as well as four limestone writing slabs (Reeves, 1990, p. 167). It seems that although papyrus was used by royalty, even the king sometimes used less expensive writing materials such as the limestone slabs. Scribes also erased their sheets or rolls of papyrus and reused them to be economical, but in other cases used very expensive

writing materials such as leather, vellum or parchment (White, 1963, p 174) These expensive materials like leather were largely reserved for the most important documents such as royal archives or temple rituals (Jackson, 1981, p 22) Examples of leather being used for writing have been found dating back to 2500 BCE, the Dead Sea scrolls found in the desert of Judea in 1947 probably being the most famous Sheep, cattle and goatskins were normally used, and techniques were developed by the Egyptians to prepare the leather for writing Only one side of the hide was used for writing and care was taken to make the leather pleasant to handle Improper curing could also give the leather a "pungent smell" (Jackson, 1981, p 36)

Many of the students' books have been discovered in tombs Besides the content, the form identifies the papyrus as a school book On many, the teacher's corrections are apparent

> An Egyptian copy-book is easily recognized, its size is peculiar as well as its shape, the pages are short, and contain a few long lines, while on the upper edge of these pages there are usually the tutor's corrections, which are generally of a calligraphic nature

One such exercise book contains the text

> Harvest The worm took half of the food, the hippopotamus the other half Many mice were in the field, the locusts, the cattle ate, the sparrows stole Woe(?) to the farmers! The remainder, which is in (sic) the threshing floor, the thieves made an end of for him (Erman, 1971, p 332)

The corrections are shown in this reproduction

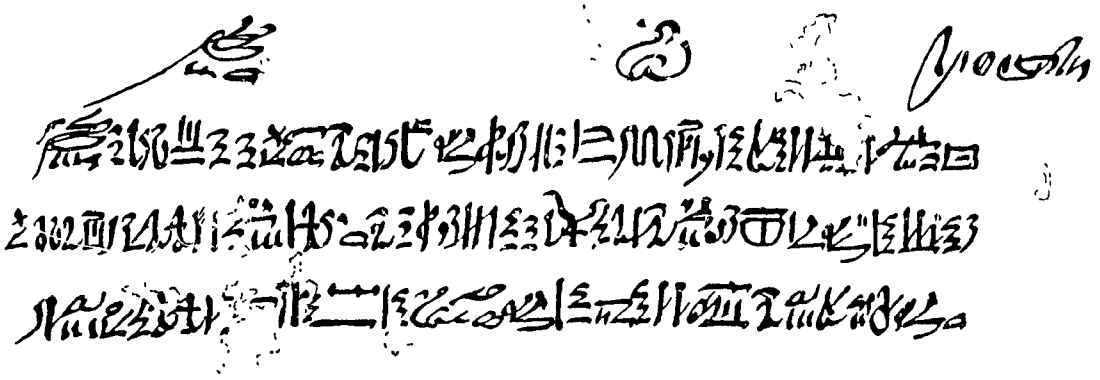

Figure 3-4
A student's exercise (Erman, 1971, p. 332)

There are two corrections to the text, presumedly written by the teacher as they are in a different script and correct the original errors in the text. The word *asha* (much) at the end of the first line is corrected. Also, the sign *te* in the middle of the third line is corrected, presumably as it was not written well enough by the student (Erman, 1971, p. 332).

In one of the exercise books, the date was written at the top of the pages. From this it can be determined that the student consistently wrote three pages every day; the next day's date appeared after three pages in the student's writing. Erman says that "this may not seem much, but we must remember that these pupils had at the same time to do some practical work in the department" (Erman, 1971, p. 332). In the case of the practical work, Erman is referring to a student attending one of the government schools where he would be expected to act as an apprentice to a government official. If oral work and physical exercise were also expected of the

student, as they probably were in the temple schools, three pages of writing might seem quite adequate

If a student used a roll of papyrus as an exercise book, the Egyptian officials or scribes used the reverse side for their rough calculations On the reverse of the papyrus sheets have been found "little pictures of lions and oxen, specimens of writing of all kinds, bills of the number of sacks of corn received, or drafts of business letters and the like (Erman, 1971, p 333), an example of which is shown here

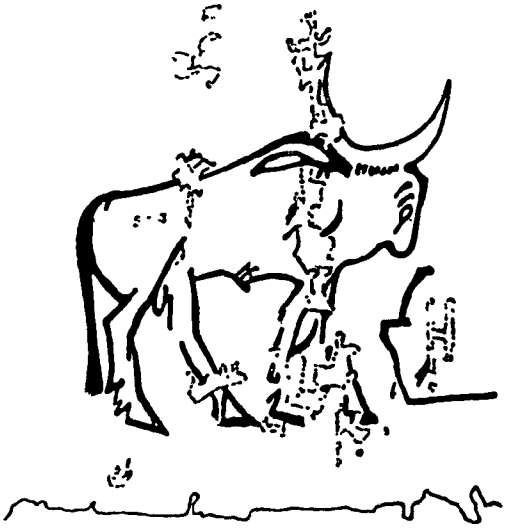

Figure 3-5
The reverse of a school papyrus (Erman, 1971, p 333)

The same materials, papyrus or limestone slabs, were used as textbooks by the teachers The teachers made the model from which the student was expected to copy, writing it on papyrus or limestone, for example In contrast with the Sumerian schools where the teacher's and student's copy were written on the same clay tablet, the Egyptians were the first to separate the student's work from the teacher's model, where the teacher's copy served as what would now be called a textbook.

One of their elementary textbooks has survived, entitled *The teaching that maketh clever and instructeth the ignorant, what Ptah hath created and Thoth hath written, the heaven with its stars, the earth and what therein is, what the mountains disgorge, and what floweth forth from the ocean, concerning all things that the sun enlighteneth and all that groweth on the earth* Despite the lofty title "the text is a collection of lists of words a government clerk might be expected to know, ranging from the names of the heavenly bodies to various kinds of food, including forty-eight different baked meats, twenty-four drinks, and thirty three kinds of (flesh)" (Casson, 1975, p 55) These lists specified different varieties of things, in much the same way as the Sumerian lists did Egyptians had many varieties of food and drink For example, during the Old Empire the Egyptians distinguished between at least six different sorts of wine and four types of beer Later, both other wines and beers were imported, adding to the list Wines were also mixed, and fruit juices were also made to further increase the variety of drink available (Erman, 1971, p 188-199)

Sometimes the class would chant in unison short sections of a passage, and once it was committed to memory, they would then write it down (Janssen and Janssen, 1990, p 78) This method is still followed in Egyptian schools today (Janssen and Janssen, 1990, p. 78), especially in studying the Koran

CURRICULUM

As in Sumer, the primary purpose of the school in Egypt was to teach the skills needed to become a scribe, although there is some suggestion that musical training may have been included Kaster reports of a passage that reads "You are taught to

sing to the flute and to the pipe, and to speak to the harp in wails[20], and to sing to the lyre," (Kaster, 1968, p. 192) but it is not clear if musical instruction took place within the classroom. Learning to read and write were considered most important; the scribe was needed to tend to the administration of the bureaucracy. The Egyptians were meticulous in recording events. Scribes were responsible for recording such things as weddings, the birth of children and deaths in the official register (Montet, 1958, p. 49). This was in addition to the responsibility of maintaining records of accounts, taxes and land transfers.

Writing had originally been restricted to governmental, fiscal, magical and religious purposes (Innis, 1972, p. 17) but as writing became easier and the use of papyrus widespread, the need for scribes grew. There were a great number of categories of scribes in Egypt. Some scribes were responsible only to the pharaoh, while others worked within government offices. Some scribes became priests, and required additional training beyond that required for government scribes. Priests were masters of the hieroglyphic script that was used for the writing of sacred rituals and secret spells. They also became masters of other specialized areas of mathematics, science or medicine. Whatever the classification, the position of scribe was a very privileged position within Egyptian society[21]. It was the promise of a position of

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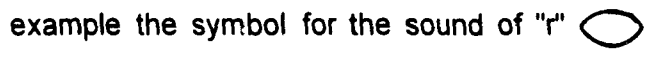
[20]Kaster adds this footnote "Egyptian rock and roll evidently. They were modern in all respects" (Kaster, 1968, p. 192).

[21]"Scribes were connected closely with the ruling classes, and the prestige attached to the higher scribal, and priestly rank was great." (Bowen, 1972, p. 33). It was theoretically possible for any person to become a scribe but there was heavy competition for acceptance into the schools and acceptance was therefore highly valued. Egyptian society was quite noticeably divided into literate and illiterate classes and many of the jobs that fell to the illiterate were extremely physically demanding (Bowen, 1972, p. 33-34)

scribe that motivated the student to tackle the long and laborious training (Casson, 1975, p. 54).

The first lessons consisted of reading and writing (Montet, 1958, p. 255). The Egyptian writing system was complicated and a great deal of practice was required before one became proficient. The Egyptians first used a system of hieroglyphs for writing although other forms of writing, hieratic and demotic, were later developed.

The Egyptians believed that hieroglyphics were the invention of the god Thoth, and were sacred. In the original hieroglyphic system, there were twenty-one picture signs that represented sounds of the consonants. Each sign stood for a short word that had a similar sound (Erman, 1971, p. 333).

For example the symbol for the sound of "r"  probably stood for the mouth, *ro*. The sign for "n"  would have come from the word for water, *nu*. When words were written, the vowels were most often omitted. As writing became more common, the Egyptians introduced symbols to represent complete words and ideas. Instead of drawing the symbols for each consonant in the word, one picture was drawn. It was simpler to draw a picture of a lute for example, than drawing out the symbols for the three consonant sounds. Instead of drawing  , a picture of a lute  sufficed.

Some words were not easily drawn so the Egyptians relied on using a rebus substitute. For example, the word for good is not easily put into a picture. The word for good (*nôfer*) was similar in sound to the word for lute (*nefer*), so the picture of a lute was also used to write "good". Special signs, determinatives, were added to the end of words to clarify which meaning should be taken. Sometimes the determinative was a sign representing the type of word, whether it represented a person or an idea

for example. From the original twenty-one signs, the Egyptians expanded their system of hieroglyphs to about seven hundred signs.

As important as the actual signs was the calligraphy. The "forming of the signs and the setting them out in a pleasing pattern, was every bit as important as putting them together to make sense" (Casson, 1975, p. 54). Students learned the proper format for grouping these signs (the signs for a single word or idea were always grouped in a quadrangular form) and how to colour the signs.

Later, sometime around 2900 BCE, at about the same time the Sumerians moved from pictographs to cuneiform writing, the Egyptians developed a cursive form of writing, known as hieratic, from the Greek *hieratikos* - priest. The hieroglyphs were abbreviated to suit the materials that were by then being used, the reed pens and papyrus. The pictures became stylized as shown in the following illustration of the hieroglyphs and the corresponding hieratic characters developed in the Middle Empire (2350-1930 BCE) and the New Empire (1530-1050 BCE), abbreviated M.E. and N.E. respectively.

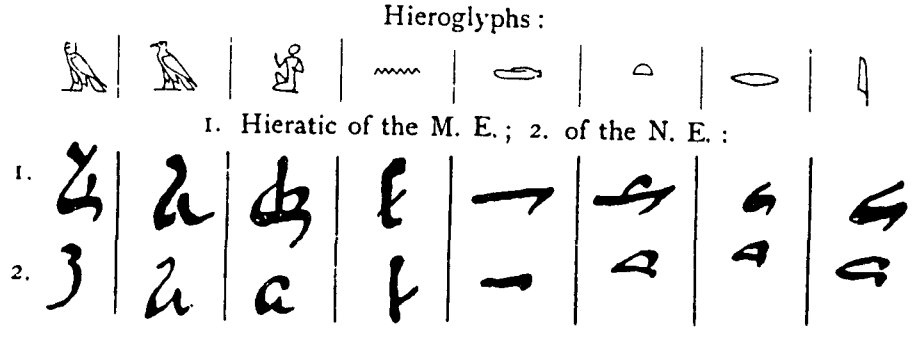


Figure 3-6
Hieroglyphs and the corresponding hieratic characters (Erman, 1971, p. 342)

Sometime around the eighth century BCE, further shortcuts in writing gave way to a third style of writing, called demotic, from the Greek *demotikos* - popular. By this time, the original pictograph was lost and this writing style was difficult to read as well as write. As there was no phonetic or pictorial basis to the words, it was not so much read as memorized. It was reserved for secular purposes, as it was faster to write than the other forms (Gaur, 1984, p. 63-65). The hieratic script was reserved for religious texts, although at one time before demotic script was developed, it had also been used for literary texts and business documents. Hieroglyphs continued to be used for the glorification of kings. As in the earliest days, the decorative hieroglyphs continued to be used for inscriptions on tombs and temples. The colours and pictures may have impressed the illiterate as much as those who could decipher the meaning behind the signs.

Much of the curriculum was devoted to the study of these complex writing systems, and because the hieroglyphs remained in use for ceremonial and other formal uses (Hawkes, 1973, p. 437), the fully competent scribe had to be familiar with all sets of characters. During the later periods, the study of hieroglyphs may have been reserved for those entering the priesthood.

The youngest student started by studying grammar and writing by copying simple passages and gradually progressed to longer, more complicated pieces (Erman, 1971, p. 331). The *Hymn to the Nile* was a favourite piece to copy (Casson, 1975, p. 55; Bowen, 1972, p. 28), an excerpt of which follows.

> Praise to thee, O Nile, that issuest forth from the earth and comest to nourish Egypt;
> Of hidden nature, a darkness in the daytime;
> That waterest the meadows, which Rê hath created to nourish all cattle;

> That givest drink to the desert places which are far from water, it is his dew that falleth from heaven;
> Beloved of the Earth god, director of the Corn god, that maketh to flourish every workshop of Ptah;
> Lord of fish, that maketh the water-fowl to go upstream. . . .
> That maketh barley and createth wheat, so that he may cause the temples to keep festivals;
> If he is sluggish, the nostrils are stopped up and all men are brought low;
> The victuals of the gods are diminished and millions of men perish.
> (Hawkes and Woolley, 1963, p. 802)

Most often the teacher would have the student copy what was known as an "instruction" (Erman, 1971, p. 331; Kaster, 1968, p. 190-191). These were of two types. The first were rules for good conduct and sayings to encourage the child to study, such as "What you gain in one day at school is for eternity. The work done there lasts as long as mountains" (Johnson, 1978, p. 162). The second type were letters. These letters were fictitious correspondence between teacher and student. The teacher usually took these letters, already prepared, from books or paraphrased another's letters, but "this did not prevent many tutors and pupils from signing their own names tc these old letters, as if they were really carrying on a correspondence with one another" (Erman, 1971, p. 331). Today there exist many copies of the same letter with different names as signatures.

Learning to write a proper letter was emphasized within the school. Egyptians emphasized the proper forms of address, and these were sometimes complicated by the many names assigned a person of importance (Erman, 1971, p. 384). Many Egyptian letters are characterized by flowery phrases, and as Erman says, "he who understood how to write an elegant political style would be able . . . to give a graceful turn to the most unimportant matter" (Erman, 1971, p. 384). Even letters for

unpleasant commercial transactions demonstrate a tendency for circumlocutory phraseology Letters complaining of default of payment are common Demanding payment, one such letter avoids asking for a goose that has not been delivered, calling it instead "that white bird" (Erman, 1971, p 122) Mystery surrounds the goose in ancient Sumer and Egypt Perhaps its quills were used for writing

Letter writers played a critical rôle in Egyptian society The power of the letter writer is illustrated in this excerpt from a letter from Mari from an unknown person who seems to be dissatisfied with the performance of the Egyptian pharaoh's letter reader - writer

> Because you are the one who has always read the tablets addressed to the king - and there is nobody else who reads them - I have not dispatched to you any more answers to the tablets of the king (addressed to me) Now however, I am sending a tablet to the king and in duplicate to you I shall repeat the previous message to you Read this tablet and -if it is appropriate - read it to the king (Oates, 1979, p 163)

The same importance was attached to the position of letter writer in later societies such as that of British India described vividly in Kipling's *Kim* Kim hires a letter writer from the bazaar, and after haggling over the price to be charged, has the letter writer write a letter Although the letter writer was thought to be "by virtue of his office, a bureau of general misinformation" (Kipling, p 86), it was believed that he was privy to the goings-on in the city The letter would later prove crucial in determining the outcome of a battle The importance of letter writers continues, perhaps the modern equivalent is the professional resume writer

Much of what the student in ancient Egypt was given to copy had one primary theme: the advantage of becoming a scribe. The profession of scribe was favourably compared with other occupations in the material the students were given to copy (Jackson, 1981, p. 96). One common work which was copied by students was entitled *Satire on Trades*. Sometimes in comical terms, the exalted position of scribe was compared to such occupations as barber who sacrificed himself to chins and going "from street to street seeking out those whom he may shave" (Hawkes, 1973, p. 363). A weaver was described as "worse off than a woman; squatting, his knees against his chest, he does not breathe." (Hawkes, 1973, p. 362) and of other professions it was said:

> I have never seen the smith as an ambassador, but I have seen the smith at work at the mouth of his furnace, his fingers like the crocodile's, and he stank more than fishes' eggs . . . .. The stonemason finds his work in every kind of hard stone. When he has finished his labours his arms are worn out, and he sleeps all doubled up until sunrise (Hawkes and Woolley, 1963, p. 467).

Another text often copied by the schoolchildren was known as *In Praise of Learned Scribes*. Here are found such statements as

> Be a scribe, desire that your name may endure. More effective is a book than a decorated tombstone . . . .. A man is perished, his corpse is dust, all his relatives are come to the ground - it is his writing that makes him remembered in the mouth of the reciter (Hawkes, 1973, p. 436).

Such professional propaganda is still common. In a university textbook used to teach word processing, the students are given a sample paragraph to type which

includes the lines: "We have purchased enough wonderful IBM microcomputers so that each employee can have one on his/her desk" (Robertson and Robertson, 1991, p. 39), while the profession of schoolteacher is glorified in school readers as well as in popular fiction and magazines such as *Reader's Digest*.

The student advanced to copying classics of Egyptian literature although the Egyptian schoolchildren may not have had any literature as exciting as the Sumerian *Epic of Gilgamesh* to copy (White, 1963, p. 178). The myth and tradition represented in Sumerian writing was replaced with lyrical verse such as *The Hymn to the Nile* (see page 104), love poetry (Hawkes, 1973, p. 438), songs and hymns (Johnson, 1978, p. 167). Their writing is characterized by the flowery use of the language (Johnson, 1978, p. 166) and a focus on social and secular concerns (Hawkes, 1973, p. 439)..

Egyptian scribal students were also expected to "familiarize themselves with the laws and regulations, with history and geography and with the principal technical processes" (Montet, 1958, p. 256). In some cases, students received instruction in swimming (Erman, 1971, p. 126). There are no other references to instruction in swimming; maybe swimming lessons were reserved for those students within the royal courts where swimming pools were available, leaving the other children to learn on their own. Gymnastics, ethics, a "practical philosophy" and good manners were also subjects in the curriculum (Erman, 1971, p. 126).

The education for many scribes went beyond learning to write and they were instructed in the knowledge and skill required for their future profession. However, training in one area did not prevent a scribe from switching careers and they were "capable of switching from one to the other with remarkable ease" (Montet, 1958, p.

256, Erman, 1971, p. 330). The study of geometry and arithmetic was emphasized for very practical reasons. For example:

> the annual flood of the Nile causes such drastic changes in the appearance of the landscape, thus giving rise to endless and varied arguments among neighbours about the precise extent of their land, that it would difficult for anyone to resolve these problems without having recourse to the methods of geometry. (Romant, p. 17)

The Egyptian system of mathematics was not as well developed as the Sumerian system. The study of mathematics, some aspects which may have been borrowed from the Sumerians (Hawkes and Woolley, 1963, p. 673), stagnated in Egypt, and there was little mathematical inquiry for its own sake (Hawkes and Woolley, 1963, p. 669; Boyer, 1968, p. 12)). They settled for what worked, and were not compelled to move beyond that. They used a decimal system, and had a close approximation to pi, but it was probably determined empirically (Hawkes, 1973, p. 442).

They had symbols for the number one (|), the number 10 (∩) and the number 100 (a stylized 9) as well as for other powers of 10. A lotus flower stood for 1000, a bent finger for 10,000, a fish resembling a tadpole for 100,000 and a kneeling figure for 1,000,000 (Boyer, 1968, p. 10). The number 3 would be represented by three vertical lines, and writing right to left, the number 562 would be: | | ∩∩∩∩∩ 99999. Sometimes the number would be written left to right and sometimes vertically. The symbols were sometimes arranged in groups, for example the six ∩'s might be written one group of three on top of another group of three. The symbols themselves were sometimes reversed in orientation, so the 9, for example, might be written the other way around. Later in their history, at least by 1600 BCE, the Egyptians began

to use a hieratic notation rather than the hieroglyphic notation Symbols represented digits and multiples, although it remained decimal based, a horizontal bar was used instead of four vertical bars for the number four, for example (Boyer, 1968, p 12)

The basic operation in Egyptian arithmetic was addition Multiplication consisted of successive additions which were actually doublings (Boyer, 1968, p 14) For example, if the number 32 was to be multiplied by 16, 32 would be added to itself to give 64 This result would be doubled to give 128, and the result doubled again to give 256, and once more to give the final result, after four doublings, of 512[22]

Examples of these types of exercise are given of the Rhind Papyrus. When a final answer to a problem is given, it is followed by a picture of a sealed scroll of papyrus.

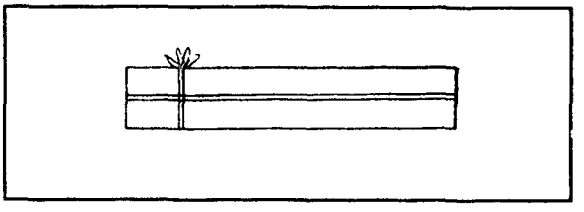


Figure 3-7
The sealed papyrus roll

The tie on the diagram represents the string that was used to tie up the large roll of papyrus once it was completed to prepare it for storage In some cases, papyrus rolls were put into a leather sheath before being stored This symbol is a forerunner to the

[22]This method of multiplying numbers persisted into the Middle Ages, and documents from the Middle Ages show calculations similar to those on the Rhind papyrus (Dantzig, 1954, p. 26).

Latin Q.E.D. placed at the end of mathematical proofs. An American mathematician, Paul Halmos, introduced the use of a dark, filled-in square to replace Q.E.D. at the end of a proof to indicate closure, as he thought it was less intimidating than Q.E.D. (Paulos, 1991, p. 196). This symbol is closer to the Egyptian representation.

The Egyptians recognized a few natural fractions and examples on the Rhind Papyrus indicate that they would break down other fractions such as the fraction 7/12 into 1/3 + 1/4 (Hawkes, 1976, p. 669; Boyer, 1968, p. 13-15). The papyrus shows that the Egyptians were quite competent in handling unit fractions, but did not handle all fractions with the same ease. They treated fractions such as 3/5 as "part of an uncompleted process", which could be reduced to the sum of three unit fractions 1/3, 1/5 and 1/15 (Boyer, 1968, p. 13); all fractions were written with a numerator of one (Kemp, 1989, p. 111). Factoring in this manner provided the basis for solving algebraic problems which were found on papyri along with arithmetic problems.

The process used by the Egyptians for solving these algebraic problems generally required the equivalent of solutions of linear equations where the unknown is referred to as the Egyptian word "aha", which meant an unknown quantity, or heap (Boyer, 1968, p. 15).

> The solution . . . is not that of modern textbooks, but is characteristic of a procedure now known as the "method of false position," or the "rule of false." A specific value, most likely a false one, is assumed for heap, and the operations indicated on the left-hand side of the equality sign are performed on this assumed number. The result of these operations then is compared with the result desired, and by the use of proportions the correct answer is found. (Boyer, 1968, p. 15-16)

For example, problem 24 on the Ahmes's papyrus asks for the value of the unknown aha, if aha and a seventh of aha is 19, or as it might be expressed by students today $x + 1/7\ x = 19$ The solution given by Ahmes uses the "rule of false" to derive the value of aha A specific value, most likely a false one unless the solver made a good estimate, is assumed for aha The operations indicated on the left-hand side of the equality sign are performed on this number The result of these operations is then compared with the desired result, and by the use of proportions, the correct answer is found (Boyer, 1968, p 15-16)

In problem 24, the tentative value of aha is taken as 7, so that $x + 1/7x$ is equal to 8 The desired answer was 19 The relationship of the result (8) to the desired number (19) is found We would think of the ratio of nineteen to eight as 2 3/8, but Ahmes in the Egyptian manner, wrote this relationship using unit fractions as (2 + 1/4 + 1/8) So, to find the correct value of aha, the tentative value of 7 was multiplied by this value to give the correct value of aha In this case, 7 multiplied by (2 + 1/4 + 1/8) equals 19, or as Ahmes wrote it, (16 + 1/2 + 1/8) Following this calculation, Ahmes showed that the value for aha was correct by adding to it one-seventh of aha to give the result of nineteen This constituted a "simple instance of a proof" (Boyer, 1968, p 16) although, like the Sumerians, there are no formal proofs or theorems to be found in the Egyptians' mathematical work

These "aha" exercises found in the Rhind papyrus were designed as practice exercise for students Although most of them are practical, Boyer reports that there are a few which seem to be of a recreational nature (Boyer, 1968, p 16) Problem 79 cites seven houses, 49 cats, 343 mice, 2401 ears of spelt (grain), 16807 hekats (a measure of grain) (Boyer, 1968, p 16) The problem did not call only for the

practical answer, which might be how many hekats of grain could be saved, but also for the number of houses, cats, mice, and ears of spelt From these mathematical papyri, the Rhind and the Moscow (located in the Moscow Museum) being the most famous, the school teachers made copies for use in instruction (Bowen, 1972, p 37)

There may have been a series of examinations, and graduates may have received diplomas (Montet, 1958, p 256) Those students who went beyond the rudimentary instruction to become priests had to learn the attributes of all the gods as well as be familiar with all rituals These students, having passed an examination, were initiated into the priesthood The graduate "took off all his clothes and was bathed, shaved and anointed with perfumes Then he put on his full priestly regalia and was 'admitted to the horizon of heaven'" (Montet, 1958, p 280). For those graduates entering other scribal professions there is less known about the examination and initiation procedures, although sometimes a clever student could write examinations designed for older students (Montet, 1958, p 255)

Once having learned to read and write, a student might attend a specialized school such as a medical school (Casson, 1975, p 61) If there was an area where the Egyptians excelled it was in medicine Medicine in Egypt was a blending of magic, religion and practical procedures, but there was less of an emphasis on omens and spirits than in Mesopotamia (Hawkes, 1973, p 446) There have been found papyri listing drugs to be given for specific illnesses, but along side are listed spells and charms to make the drugs more effective Drugs were usually derived from plants and trees, most of them coming from fruits and herbs (Erman, 1971, p 358-360)

> The idea prevailed that a remedy ought not to be too simple or commonplace A prescription ought if possible to contain many

> ingredients - there was in fact a poultice which was composed of thirty-five different substances, it was also necessary that the ingredients should be rare and also if possible disgusting Lizard's blood, the teeth of swine, putrid milk and stinking fat, the moisture from pigs' ears and the milk of a lying-in woman, and a hundred other similar things, were favourite ingredients In many recipes we can discover one useful ingredient, -as a rule something quite common, like honey, beer, or oil (Erman, 1971, p 360)

The Edwin Smith Papyrus is known as the oldest surgical textbook (Hawkes, 1973, p 446)

> What is most remarkable is that it is entirely free from magio-religious elements Starting with an essay on the heart, there are forty-eight sections concerning wounds and fractures set out according to the topography of the body Each section is divided into the same five parts the nature of the hurt, examination of the symptoms, diagnosis, prognosis, and treatment As for the prognosis, there were three possible choices 'An ailment which I will treat' (Certain cure), 'an ailment with which I will contend' (possible cure), 'an ailment not to be treated' (a fatal case) The last, cautious, decision suggests that there may have been penalties for surgical failure (Hawkes, 1973, p 446)

Medical schools were usually operated by the temples as many of the procedures remained closely associated with the spiritual The Houses of Life, institutions of higher learning, provided specialized training in medicine[23] and surgery The exact function of the House of Life is difficult to determine, it may have been more than a place where specialized studies in medicine and astrology were

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[23]The Egyptians developed a pregnancy test which was later given by Hippocrates "The herb Bededu-Ka, powdered and soaked in the milk of a woman who has borne a son Let the woman eat it if she vomits it, she will bear a child, if she has flatulence, she will not bear" (Erman, 1971, p 363) This recipe, somewhat modified, appeared in 1873 in a British pamphlet called *The experienced midwife* (Erman, 1971, p 364, Watterson, 1991, p 88) No one is quite sure how it got there

undertaken (Bowen, 1972, p. 39). They functioned as centres of training as well. Apprentices attended these centres which were often well stocked with papyri used as textbooks, and apparatus such as a device used to time the transit of a star (Hawkes, 1973, p. 444-446). They "perform(ed) special services for Pharaoh and his government, such as fixing the dates of feasts and seasons and generally supervising the calendar, maintaining dynastic records and composing official inscriptions" (Hawkes, 1973, p. 437). Documents such as the *Book of the Dead* were produced in the scriptorium which was found within each House of Life. Because the Egyptians associated writing and books with the mystical, this leads Bowen to suggest the House of Life "functioned as the integrator of all Egyptian learning, that is, an institution for maintaining the social and personal continuity in the after-life" (Bowen, 1972, p. 40).

TEACHING METHODS

Teaching methodology followed much the same model as the Sumerian system: the student copied what had been prepared by the teacher or what was contained on existing papyri, the student also had to be instructed on how to hold the wooden palette or papyrus in his left hand, and how to moisten the tip of his rush pen in the pot of clear runny gum[24] before brushing it across the dry cake of ink (White, 1963, p. 174).

The pens and inks were not easy to manipulate. The pen was usually made from a thin-stemmed rush plant (*Juncus maritimus*) and cut to a length of around 9

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[24]The Egyptians used the sap of the acacia tree (Bowen, 1972, p. 26) as a binding agent or to mix with pigments and water to make small blocks of colour (Jackson, 1981, p. 21; Bowen, 1972, p. 26).

inches It was chewed or hammered soft at one end to create a fray This way it retained enough ink to write many letters, depending on their size, before it needed re-inking It was used to draw fine lines, or cut square to produce a letter very like that made by a broad pen nib (Jackson, 1981, p 21)

The ink used by the Egyptian scribes was very stable and has retained its colour after thousands of years It was made of carbon, often soot scraped from cooking pots (Bowen, 1972, p 26), mixed with a binding agent such as gum from trees. This gluey substance was also used for fixing the bandages around corpses in mummification (Casson, 1975, p 110) There have been many recipes for coloured ink passed down from the Egyptians as well as other societies Resin, honey, cow's urine and borax were also used as fixatives (Gaur, 1984, p 51) Red ink was made in the same way, prepared with pigment made from one of the many red oxides which occur naturally in the earth (Bowen, 1972, p 26, Jackson, 1981, p 21)

> The scribe's tools and methods of working seem to have changed very little over the centuries in Egypt, although in the 5th Dynasty of the Old Kingdom a shell was sometimes used in which to dissolve the ink, and later there is evidence that ready-made cakes of ink similar to the water-colour tablets we buy today were glued to the upper part of the wooden palette (Jackson, 1981 p 21)

Red ink was probably used to indicate titles and headings and the beginnings of new paragraphs (Jackson, 1981, p, 21, Montet, 1958, p 255, Bowen, 1972, p 26) One researcher reports that the schoolchildren's homework was corrected in the teacher's red ink (Desroches-Noblecourt, 1963, p 47) but this is not confirmed by other writers.

A scribe advises a student to partake in discussion with those who are wiser, so it appears that there was time in the school day for discussion and perhaps oral work, although the emphasis was on learning to write. Excerpts from *Satire on Trades* or "passages warning of the dangers of dropping out" (Kaster, 1968, p. 190) were diligently copied by the students.

THE STUDENTS

As in Sumer, the children of the upper-class families were expected to attend school, and for the most part, it appears that "no sons of the poor were among them" (Casson, 1975 p. 61). However, it has been noted that some students "of humble beginnings" who showed a special aptitude would be sent to school. Although a position in a school was most often hereditary, there is the case of at least one learned man, Khety, being from humble social origins (Hawkes, 1973, p. 436). Despite the fact that entrance to school might have been more lenient in Egypt than in Sumer, Hawkes speculates that a smaller proportion of the Egyptian population was literate than in Sumer (Hawkes, 1973, p. 435). It is likely that as many as ninety percent could not read and write *per se*, but many could probably understand the hieroglyphic inscriptions of which some came to be used as standardized signs within Egypt (Johnson, 1978, p. 160).

It appears that some students, at least those who advanced beyond early stages of education, would have attended boarding schools (Hawkes and Woolley, 1963, p. 466). Khety wrote to his son with whom he was "journeying upstream to the Residence City, to put him to the writing school among the children of the officials" (Hawkes, 1973, p. 436). The cost of boarding would have added to the cost of tuition,

putting an education in boarding school beyond the financial means of any but the wealthy families of Egypt. It has been noted, however, that many workers were able to read and write (Janssen and Janssen, 1990, p. 68) and often spoke in flowery language (Erman, 1971, p. 126). Noting the complexity of the Egyptian workmanship, it is not surprising that the workers, such as those responsible for building the pyramids and temples, would be required to achieve a certain level of literacy.

As well as boarding schools there were day schools. Day schools may have been common, especially for the young child (Montet, 1958, p. 254; Janssen and Janssen, 1990, p. 74). There is an account of a child heading off on the walk to school carrying a "little basket containing a crust of bread and a jug of beer prepared for him each morning by his mother" (Montet, 1958, p. 254).

It has also been suggested that people from lower social classes could choose to send their sons to the royal palace to have them educated alongside the royal princes (Jackson, 1981, p. 20) but this is not confirmed by other scholars.

Schooling began quite early; one scribe, Bakenkhonsou, who became the high priest of Amūn, enrolled at the age of five and studied for twelve years in the "writing school in the temple of the Lady of Heaven" (Montet, 1958, p. 254). His schooling might have been more comprehensive than other children's as his father was a distinguished priest.

Young Egyptian children went naked for the first years of their life and wore only a necklace. At some stage the boys were given a loincloth and belt, and the girls a dress to wear. This marked the end of childhood, at about the age of four of five, and an important turning-point in their lives which coincided with their first day of school (Montet, 1958, p. 254; Erman, 1971, p. 164).

Girls did not normally attend school. There is an Egyptian word for a female scribe but no instances of the word being used (Hawkes, 1973, p. 404). There were, as mentioned earlier, four women scribes depicted on funerary stela and in burial chambers (Ward, 1987, p. 35). Although there is no mention of girls attending school, probably some girls went, especially the daughters of the pharaoh as the writings suggest that all the children of the palace met for instruction (Watterson, 1991, p. 124) and perhaps those of the "upper class" (Janssen and Janssen, 1990, p.84-85). An Egyptian official wrote to his son to "love letters like your mother" (Jackson, 1981, p. 19), so perhaps writing was not uncommon for women. Women acted as funerary priests and like their male counterparts, enjoyed material benefits in return for maintaining for their involvement (Fischer, 1987, p. 20). It is also known that women sang at the temples, but it is unlikely that they resided at the temple as did the men (Montet, 1958, p. 279).

Children, both boys and girls, are depicted in the art of Egypt, and with seemingly equal affection although sons were especially valued as it was the son who was responsible for overseeing the burial of the parents (Watterson, 1991, p. 71). The words of a young Egyptian woman tell of the great grief caused her husband as "thrice I conceived daughters but no son. But with my husband I prayed to the Lord God Imhitep, son of Ptah, the giver of favours, who grants sons to those who have none and he answered our prayer" (Montet, 1958, p. 52). Land could be passed down from mother to daughter and there are cases where a son was given his mother's name (Watterson, 1991, p, 23). Childhood seemed pleasant; the climate and agricultural bounty allowed the Egyptians to provide for all their children without great

expense and they did not have to resort to abandoning children they could not afford, as did the Greeks (Watterson, 1991, p 122)

THE STAFF

The tutors of the royal court were well educated scribes, but were probably not part of the royal family (Petrie, 1923, p 125) Some priests acted as teachers, especially for some of the higher subjects. hieroglyphic writing, geometry, arithmetic and ethics (Petrie, 1923, p 123) The teachers might also have been princes, viziers, and in specialized schools, the instructor would have been one of the profession There is also the case of a physician who was sent to a medical school to "re-establish the department of the House of Life devoted to medicine" and that "he provided them with everything that could ensure their mastery, and with all the instruments indicated in the writings" (Hawkes, 1973, p 436)

In some cases, architects became teachers (Hawkes and Woolley, 1963, p 665) It would seem that the scribes and priests[25] were responsible for instruction in writing, which was the most important subject area, and other specialists became involved in instructing in their fields of expertise, or acting as mentors to the apprentices within the governmental schools

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[25]Although scribes and priests were respected positions in both Egyptian and Sumerian societies, the teachers of Greece were less highly regarded (see page 170)

THE SCHOOL DAY

Learning the skill of writing was difficult. The primary incentive for the schoolchild to succeed was the esteemed position of scribe within Egyptian society, although it was also important for the child to please his father, who was responsible for the child's education and secure the esteem of his parents (White, 1963, p. 173). Much of what the schoolchild used as copy material espoused the position of the scribe.

A scribe was one of the few avenues to advancement in a society where a person's place was usually determined by his father's position. During the reign of Ammenemes III in the fourteenth century BCE, a royal scribe who bore the same first name as the pharaoh rose to become the king's vizier and was rewarded with his own temple (Constable, 1987, p. 69). Another scribe, Uni rose from mere Keeper of the Royal Warehouse through a succession of offices to become governor of Upper Egypt while Nekhebu advanced from "common builder" to Royal Constructor and Architect (Casson, 1975, p. 56).

As in the Sumerian school, discipline was strict. The foundation of all teaching was "the youth has a back, he attends when it is beaten" (Erman, 1971, p. 330). Some papyri contain accounts of the school day, and in particular the punishments.

> Write with your hand, says the scribe Amenmosé, over and over again, discuss things with those wiser than yourself . . . the way to get strong is by practising every day . . . if you slack for a single day you will be beaten. A youngster's ear is on his back; he only listens to the man who beats him. Listen carefully to what I say, since you will find it valuable. Monkeys have to be taught to dance, horses are trained. The young kite is taken on the nest, the falcon is made to fly. Always remember that discussion is the way to make progress, don't neglect your writing, and set your heart to listen to what I say, for you will find

> it valuable. (From the Bibliotheca aegyptiaca II cited in Montet, 1958, p. 256).

The same papyrus contains another similar account:

> I told you forsake your writing, that you give yourself up to pleasures. You go from street to street where it smells of beer, to destruction. Beer, it will scare men from you, and it will send your soul to perdition.
>
> You are like a broken steering-oar in a ship, that is obedient on neither side. You are like a shrine without its god, and like a house without bread. (from the Bibliotheca aegyptiaca VII cited in Kaster, 1968, p. 192)

A former schoolboy writes to his old tutor: "Thou hast made me buckle to since the time I was one of thy pupils. I spent my time in the lock-up; he bound my limbs. He sentenced me to three months, and I was bound in the temple (Erman, 1971, p. 330). Evidently there was corporal punishment.

One document recounts that lesson time took up half the day but, for the students it was said to "endure for ever like the mountains." When "noon was announced" the children left the school "shouting for joy" (Erman, 1971, p. 330). Although Montet says that the student carried his bread and beer to school with him in a basket (Montet, 1958, p. 254), another document says that the boy's mother brought him his food - "three rolls of bread and two jugs of beer" (Erman, 1971, p. 330). Regardless, it would seem that there must have been some activities for the schoolchildren during the afternoon if a lunch was required. As is the situation today in countries with warm climates, school may have begun very early in the morning and the lunch eaten mid-morning to allow the children and teachers to sleep through the hot afternoon.

As in Sumer, the classroom in ancient Egypt provided the citizens with a trained scribal class and apprenticeship training for careers in such areas as medicine and astronomy. The child wanted to please his mother and father by performing well in school, and parents supported their children in their education; mothers either packed a lunch for their children or carried them their lunch. The classroom was probably a room in the temple to which the child could walk, although sometimes children went to boarding schools. Learning to write was difficult for the child. The teacher provided sample copies on papyrus or limestone for the child to copy, and these copies functioned in much the same way as what we think of as present-day text books which provide models for students to reproduce. The Egyptian classroom had a purpose similar to the Sumerian classroom - to produce a scribe - and the curriculum and methods used to train the child were much alike. We will now look at the schools of Greece and see what life in the classroom was like for the Greek child.

Chapter 4: Greek Education

There is more written about schools during the development and height of the Greek civilization than the schools of the civilizations which preceded it. I have said that many histories of educational systems begin with the schools of Greece. H.I Marrou's, *A History of Education in Antiquity* (1964), is one such. Another comprehensive look at Greek education is given by James Bowen in *A History of Western Education* (1972). Based upon the large number of books that begin the history of education with the Greeks, it seems that the Greek classroom may be considered to be at the root of developments of the classroom in Western civilization. However it may be simply because there is much less known about the more ancient civilizations, and a lack of extant material from these more ancient civilizations. In this chapter I will attempt to show, however, that the schools of Greece did not differ that much from the schools of Sumer and Egypt, and all were similar in certain respects to modern schools.

Civilization emerged in Greece much later than it did in Sumer and Egypt: it was not until the second millennium BCE that any form of Greek civilization was evident. While civilizations had been flourishing in Sumer and Egypt for thousands of years, a Greek civilization did not mature until around 2000 BCE. The beginnings of this civilization have been traced back to the Minoans (from Minos, one of their kings) who first settled on the island of Crete as early as the third millennium BCE. By 2000 BCE, the Minoan civilization was well established with a capital founded at Knossos.

Clay tablets dating to the Minoan civilization have been discovered but the writing on the tablets has not been completely translated. It is known that early Minoans used a pictographic form of writing but later moved to a script now called Linear A (Hawkes, 1976, p. 113). The only documents which have been found were written on clay tablets, but it may be that papyrus was also used because trade had been established with Egypt where papyrus was common (Constable, 1987, p. 108). Some researchers believe that clay was used for working copies of documents but the final copies were written on papyrus (Bowen, 1972, p. 46; Chadwick, 1972, p. 205). The tablets containing Linear A script appear to be working copies as the script is incomplete in many cases and much of the writings are jottings which seem destined to be transcribed to a permanent record at the end of the year (Chadwick, 1972, p. 205). It is ironic that those papyrus copies which the Minoans considered permanent may have been destroyed, perhaps by fires which would have baked the clay tablets making them permanent while destroying papyrus (Chadwick, 1972, p. 205) or by the high humidity of the island (Bowen, 1972, p. 59).

The island of Crete saw a great deal of development during the twentieth century BCE. Palaces were built at Knossos and Phaistos and the writings on the clay tablets indicate an active commerce and trade. Despite a series of earthquakes in the fifteenth century BCE, and an especially devastating one about 1600 BCE which destroyed the palace at Knossos, the civilization survived. By about 1450 BCE, the population is estimated to be about a quarter of a million, with most people living in the cities and towns along the coast (Constable, 1987, p. 108). However, internal fighting broke out and eventually the only palace that remained was the palace at Knossos. Mycenae was the greatest of the "small principalities" which existed on the

mainland (Hawkes, 1976, p. 116) and conquered some of the smaller Minoan colonies during this stage of civil uprisings on Crete.

Around 1450 BCE there was a volcanic eruption on the island of Thera, about 110 kilometres north of Crete, that caused a tidal wave of over sixty metres (Constable, 1987, p. 120). This wiped out much of the population of Crete and destroyed the harbours and the ships used for defense and trade. The Minoan survivors scattered in the countryside and the Mycenaeans eventually took over the palace at Knossos. The Mycenaeans had already borrowed the Minoan system of notation, the Minoans being more culturally advanced (Chadwick, 1972, p. 204). They eventually revised the script into the form called Linear B which has been found on thousands of clay tablets (Chadwick, 1972, p. 205).

The clay tablets found on Crete contained only commercial and accounting records (Bowen, 1972, p. 46; Chadwick, 1972, p. 205). It is likely that they also used papyrus during this period, if not before, as the Mycenaeans had developed a large trading system and Egypt was carrying on a large papyrus trade with her former colony at Byblos (Bowen, 1972, p. 46).

Sometime around 1250 BCE, the Mycenaeans were "exposed to some threat that caused them to strengthen their citadels . . . .. This same threat may possibly have provoked them to launch the Trojan War at some date before the end of the century" (Hawkes, 1976, p. 120). There is speculation as to exact nature of this threat but similar war-like activities were occurring at the same time in Egypt and throughout the entire eastern Mediterranean region. The reason Mycenaean civilization collapsed is still unclear but it was almost entirely destroyed by 1130 BCE (Bowen, 1972, p. 47).

"Every Mycenaean site so far excavated shows traces of fire and destruction," says Chadwick (Chadwick, 1972, p 212)

During the next few centuries, the inhabitants of Greece were nomadic It was not until the eighth century BCE that there was any revival of a civilization in Greece By 800 BCE the inhabitants of Greece had adopted and adapted the Phoenician alphabet The Olympic games had been established, people had come together to live in towns and Homer had created his epic writings A common consciousness had been established, the inhabitants of Greek called themselves Hellenes, after their belief in a common ancestor, Hellen, described by Homer, and called their civilization that of Hellas (Bowen, 1972, p 49)

It was sometime between 750 BCE and 650 BCE that the Spartans gained control of areas surrounding their original settlements in the Eurotas Valley and enslaved the inhabitants of nearby Laconia who became known as Helots. Dorian tribes other than the Spartans had driven out the original inhabitants of the lands they invaded but the Spartans neither drove out or assimilated the inhabitants, but instead reduced them to slaves The inhabitants of other villages which had been overtaken by Dorian tribes became known as *perioeci* or dwellers around and were treated much better than the Laconians and were generally allowed to live in their villages without interference As Sparta continued to widen its borders by invading other settlements, more and more of the citizens became Helots

Eventually the Spartans became a minority and were outnumbered by the Helots as much as fifteen-to-one After numerous revolts by the Helots, one of which in 650 BCE was a tremendous struggle for the Spartans, the Spartans realized that it was imperative that they increase their military power if they were going to maintain

superiority. It became the goal of the Spartans to become models of physical fitness, cast off any activities which would not contribute to their physical superiority and make each man into a professional soldier. Until this time, the Spartans were not without culture and the arts: they enjoyed dancing and song and had an official national instrument, the seven stringed lyre (Morgan, 1946, p. 29). But, the old Spartan songs and poems often glorified the individual hero and this did not fit in with the new ideal. The new model was a city of heroes, every person working together to create military superiority; individuality was seen as a necessary sacrifice for the collective spirit. A new constitution made it clear that the citizens should not indulge in such things as singing and dancing unless the activity contributed to Sparta's goal of physical superiority (Freeman, 1969, p. 275).

Sparta cut itself off from other Greek cities and became nothing more than a military barracks (Marrou, 1964, p. 18-19). Spartans became insular, neglecting cultural development, not welcoming foreigners into the city, and their training became increasingly brutal (Marrou, 1964, p. 19). Sparta started to decline around 550 BCE. The arts were totally banned, and athletics were curbed as they were thought to produce too much of an individualistic spirit. The city of Athens, on the other hand, flourished.

Athens became the centre of Greek culture. Greek philosophy had been established and there was a gradual shift from the militaristic aims of the Sparta to a greater interest in the arts and philosophy. There was a democracy and social culture that, coupled with an increasingly wealthy maritime economy, provided citizens with more leisure than previously enjoyed in a state preoccupied with militaristic gain (Bowen, 1972, p. 71; Marrou, 1964, p. 39). People flocked to the city of Athens,

where schools were being established, along with other buildings for public gatherings such as the agora and *gymnasion* The population of Athens in the 5th century BCE was around 144,000, a century before, it was around 2500 (Bowen, 1972, p. 71)

Both the Spartan and Athenian Greeks had access to a system of writing which was different from the cumbersome writing methods of Sumer and Egypt. The system used by the Minoans and Mycenaeans seems as awkward as that used by the Sumerians and ancient Egyptians, but the Greeks used a simplified alphabet which was a modification of the alphabet adopted from the Phoenicians[26]. The Phoenician alphabet had no symbols for vowels, but the Greek alphabet was "phonetic, each symbol having a clearly identifiable sound. In addition, each symbol had a distinct shape, so that neither in sound nor in appearance could the letters be confused" (Bowen, 1972, p 7) Even before the Greek alphabet had been modified to its final form, the simplified writing system afforded by the use of the Phoenician alphabet had caused an increase in literacy This eventually allowed a separation of scribal procedures and speculative thought The scribal craft became a mechanical skill and was eventually relegated to slaves (Bowen, 1972, p. 61). The material used for writing also changed There was a shift from clay tablets to papyrus and later to parchment

The education provided in the schools of Hellenic Greece is referred to as "Old Athenian Education" (Marrou, 1964, p 36) and provided the basis for what was to develop into the classical form of the Greek school during the Hellenistic era beginning

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[26]The Phoenicians lived in the Mediterranean region now known as Lebanon on a narrow strip of land between present day Shuksha and Akka (Moscati, 1973, p. 3). They had established a wide trading route during the first millennium BCE. Their civilization lasted until around 146 BCE when it was divided between the Greek and Roman empires (Harden, 1962, p 5)

after the death of Alexander the Great in 323 BCE and his tutor, Aristotle, in 322 BCE. The Hellenic school combined with influences of the Sophists and Socrates for advanced education resulted in an educational system that was at the "centre of the Hellenistic Civilization" (Marrou, 1964, p. 97) and remained unchanged for centuries after its development (Bowen, 1972, p 152).

The classrooms of the Minoans, the Mycenaeans, the Spartans, and the Hellenic Greeks will be examined before focusing on the final form the classroom achieved during the Hellenistic period.

MINOAN AND MYCENAEAN CLASSROOMS

The abundance of clay tablets found on Crete, all of which contained bureaucratic records, suggest that bookkeeping must have been widely practised some time before the beginning of the fourteenth century BCE (Chadwick, 1972, p. 204; Billigmeier and Turner, 1981, p. 2). Because there are no other types of writings found on these tablets, we can only speculate that there may have been classrooms to train the scribes required to maintain a complex administration. Chadwick says that "a secretariat, busy recording economic statistics, was a fixture of every Greek state"[27] (Chadwick, 1972, p. 205) during the fourteenth and thirteenth centuries BCE, yet there is only one clue to what the classrooms may have been like. Tablets were found on stone benches in a small room near the royal suite at Knossos. These tablets seemed to have been used for writing practice; at the top of each tablet a

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[27]Women were an essential part of the Mycenaean labour force; according to names on the tablets, they acted as priestesses, owned land, and worked as weavers, leather-workers and bath attendants (Billigmeier and Turner, 1981, p. 3-10) but the sex of scribes is unknown.

sentence was written out in a firm hand, that of the teacher possibly, and in the space below were copies made in a shaky hand, perhaps that of the student (Constable, 1987, p. 116). This corresponds with the model of scribal education in Sumer and Egypt but because of the lack of evidence, we can only speculate what the classroom may have looked liked .

In Sparta, however, the purpose of the classroom was not to produce a scribe; it was designed to produce a soldier.

SPARTAN EDUCATION

THE CLASSROOM

The form of the Spartan classroom corresponds with its aim to produce a soldier: it was modelled after military barracks. From the writings of Plutarch, an admirer of the Spartan philosophy who wrote of the Spartan system in *Life of Lycurgus* in the first century CE, we know that children were enrolled in school and organized into troops as soon as they reached the age of seven (Plutarch, *Life of Lycurgus,* 16). The boys[28] lived exclusively in the barracks of boarding schools beginning at age twelve as it was "unlawful for a father to rear his son as he pleased" (Plutarch, *Life of Lycurgus,* 16). Before the age of seven they lived at home and attended the *Pheiditia* or men's clubs with their fathers. At these clubs, men would discuss politics and battles, while the young boys listened. Men and boys ate their meals at their club. There was also opportunity to join in games and take part in

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[28]It seems that girls did not live in the barracks but remained at home. Their education is discussed on page 135.

sports (Plutarch, *Life of Lycurgus,* 12). About fifty men attended each of these clubs (Freeman, 1969, p. 13).

Although the young Spartan finished his formal education when he was twenty years old, he was required to remain living at the barracks until he was thirty, by which time he would have put in ten years of military service. This was the rule without exception, whether or not the man was married (Plutarch, *Life of Lycurgus*, 15). According to Xenophon, the state attempted to regulate sexual contact between wife and husband: it was thought that "with this restriction on intercourse the desire of the one for the other must necessarily be increased, and their offspring was bound to be more vigorous than if they were surfeited with one another" (Xenophon, *Const. Lac.* I. 5).

SCHOOL TEXTS

As writing and reading were not emphasized in the Spartan curriculum, the use of teachers' copies is not commonly found in Spartan classrooms. The writings of Homer and Hesiod and Spartan poets like Tyrtaeus were recited by the students until they were "committed to memory" (Bowen, 1972, p. 54), but were not copied down. The students would gather to listen to these stories, sing and recite which "aroused the spirit and awoke enthusiastic and effectual effort" (Plutarch, *Life of Lycurgus,* 21).

CURRICULUM

The emphasis was on physical training and there was minimal instruction in reading and writing (Bowen, 1972, p. 52-53; Marrou, 1964, p. 16). Isocrates says of the Spartans, "they do not even learn their letters which are the means to a

knowledge of the past as well as contemporary events" (Isocrates, *Panathenaicus*, 276D) although Plutarch says "of reading and writing they learned only enough to serve their time" (Plutarch, *Life of Lycurgus*, 16).

Boys were taught to ride and hunt, as well as to swim, although they were not allowed to participate in boxing as this would cause a few muscles to be developed at the expense of the complete body (Aristotle, *Pol VIII*, iv 1338b38; Freeman, 1969, p. 26). The amount of physical exercise that was required depended on the age of the child; older boys were expected to engage in more strenuous exercises (Plutarch, *Life of Lycurgus,* 16). The boys were inspected every ten days to ensure they were in good physical condition. There were organized sports; one game had two teams on a field bordered by a stream. Once it had been decided which team would get to select the end of the field on which to start, the team members would kick, bite and tear at the opposition's eyes to force them back into the water (Freeman, 1969, p. 27-28).

Despite the emphasis on physical training, Spartan schools were not totally devoid of the arts. "The essential Homeric element of music, which was central to the whole culture and acted as a link between its various parts, connected with gymnastics through dancing and through singing with poetry" (Marrou, 1964, p. 17). The themes of the songs that the boys learned and recited were mainly in praise of dead heroes. Dancing was in the military tradition, often accompanied by flutes and performed in battle dress. These dances are similar to what would be called military drills (Marrou, 1964, p. 21).

The study of rhetoric was forbidden (Freeman, 1969, p. 21), and it there is no evidence that the Spartan student studied even basic arithmetic. An ability to respond

to questions with "concise and pithy responses" (Plutarch, *Life of Lycurgus*, 19) based on sound arguments was the only other curricular requirement.

TEACHING METHODS

The students were exposed to extremely harsh teaching methods which were believed to produce a perfect physical specimen, but this was not a responsibility left exclusively to the school. It was ruled that a newborn baby must be presented to a group of the city's elders who would judge whether or not it was well-formed and healthy enough to live. Sickly children or those who were thought to have a poor chance at developing into strong adults, especially females (Watterson, 1991, p. 122; Reardon, 1989, p. 433), were thrown "on to the Apothetes, the dung-pit" and left to die (Marrou, 1964, p. 19; Bowen, 1972, p. 53). In early childhood, the parents were responsible for making the child physically strong and instilling the Spartan idealogy. Small babies were exercised rigorously, and Spartan mothers became well known throughout Greece for the ability to produce children with strong limbs, agile and quick (Plutarch, *Life of Lycurgus,* 16). Spartan women would be in demand later in other cities as nurses (Marrou, 1964, p. 20).

At school, students were exposed to extremely harsh conditions; they were forced to go naked and barefoot. Hardened feet would allow the child to run and jump quickly without notice of the terrain. Students were allowed to bathe only on special occasions and when they were allowed, it was in the river Eurotas which became cold in the winter. They were made to sleep on uncomfortable reed beds. They were kept hungry: it was thought that a meagre diet produced slim, tall bodies and that being

without food was a condition to which a soldier should be accustomed (Marrou, 1964, p. 22-23; Bowen, 1972, p.54; Plutarch, *Life of Lycurgus*, 17).

Hunger also encouraged stealing, and the boys were encouraged to steal as this was thought to make a man bold, cunning and resourceful. It was important that the boys be successful thieves; as soldiers they would be expected to ambush and forage. Boys were punished not for stealing, but for being caught. Plutarch tells of a boy allowing a fox that he had hidden under his garment to "tear out his bowels with his teeth and claws, choosing rather to die than be detected" (Plutarch, *Life of Lycurgus,* 18). Isocrates said that skill in robbery was the road to the highest offices in Sparta and "if anyone can show that this is not the branch of education which the Lacedaimonians regard as the most important, I admit that I have not spoken a word of truth in my life." (Isocrates, *Panathenaicus*, 277).

THE STUDENTS

All the boys, but not the girls, of the citizens of Sparta attended school once they had reached the age of seven. Each household paid a fee each month to the man's club; by doing so, a man's rights of citizenship was maintained. One of the basic rights of citizenship was the right to have male children educated by the state. The monthly contribution consisted of "a 'medimnos' of barley meal, eight 'choes' of wine, five 'mnai' of cheese, two and a half 'mnai' of figs, and some very cheap relish" (Freeman, 1969, p. 14) which was about one and a half bushels of meal, five gallons of wine, five pounds of cheese and two and a half pounds of figs. If the man had made a sacrifice to a god, he contributed part of the sacrificed animal and if he was successful in hunting he shared his catch with the members of the club. If a family

was unable to pay, it would be expelled from the club, lose the rights of citizenship, and its sons would not be educated.

Sometimes, if a family could not pay, a benefactor would contribute to allow the son to attend school. The size of the average Spartan family was small, so the wealthier citizens could usually afford to make a donation to send an extra boy to school. This would have been viewed as a great contribution to the overall glory of Sparta; the school would produce another soldier (Freeman, 1969, p. 16). A sponsored child was not given the right of citizenship when he graduated unless he had performed an exceptional deed. Citizenship was in this way hereditary (Freeman, 1969, p. 16). Sometimes the sponsored children were Helots chosen to be school companions of the sons of the citizens. Xenephon mentions foreigners among the sponsored children (Xenephon, *Hellenica*, v. 3.9).

A different name was given to each of the school years, although there were three main groups according to Marrou: from age eight to eleven, the class was referred to as that of the "little boy", from age twelve to fifteen the class was known as that of the "adolescent" and from age sixteen to twenty the class was known as "the ephebe (in Sparta, irene)" (Marrou, 1964, p. 20). The senior members of the oldest class, those who were twenty years old, were known as *eirenes*. (Marrou, 1964, p. 20; Bowen, 1972, p. 53-54).

Although the girls did not attend the military school, they did not go untrained. They were taught gymnastics and sports and were organized into groups, much like the boys' companies, but slept and ate all their meals at the family home. The main purpose of the organized sports and gymnastics for the girls was to condition their

bodies so they could produce strong babies (Marrou, 1964, p. 23; Xenephon, *Const. Lac.*, I. 4). Plutarch says that the girls were expected to

> exercise their bodies in running, wrestling, casting the discus, and hurling the javelin, in order that the fruit of their wombs might have vigorous root in vigorous bodies and come to better maturity, and that they themselves might come with vigour to the fullness of their times, and struggle successfully and easily with the pangs of child-birth. (Plutarch, *Life of Lycurgus*, 14)

In keeping with this objective, girls were encouraged to appear naked and unashamed at feasts, "with no illusions about sentiment". This was thought to rid the girls of any modesty and they would therefore be willing to "mate in the best interests of the race" (Plutarch, *Life of Lycurgus*, 14).

THE STAFF

In overall charge of the Spartan educational system was the *Paidonomos*, or the Supervisor of Education (Barrow, 1976, p. 26; Bowen, 1972, p. 53). This was an important position. The supervisor was assisted by a staff of "young men with whips, who no doubt helped to keep the children in order" (Barrow, 1976, p. 26).

The students were divided into squads. A boy who excelled in judgment and was courageous in fighting was made captain of his squad and responsible for meting out punishments to the other boys (Barrow, 1976, p. 26; Marrou, 1964, p. 20; Plutarch, *Life of Lycurgus,* 17). The squads were further organized into troops of about sixty-four boys and senior students, *eirenes,* were placed in charge of these larger groups (Bowen, 1972, p. 53). Plutarch describes some of the instructional techniques used by the *eiren*.

> The *eiren*, reposing himself after supper, used to order some of the boys to sing a song; to another he put some question which required a judicious answer, for example: "Who was the best man in this city?" or, "What he thought of such an action?" This accustomed them from their childhood to judge of the virtues, to enter into the affairs of their countrymen. For if one of them was asked, "Who is a good citizen, or who was an infamous one?" and hesitated in his answer, he was considered a boy of slow parts and of a soul that would not aspire to honour. The answer likewise was to have a reason assigned for it, and proof conceived in few words. He whose account of the matter was wrong, by way of punishment had his thumb bit by the *eiren*. The old men and magistrates often attended these little trials, to see whether the *eiren* exercised his authority in a rational and proper manner. He was permitted, indeed to inflict the penalties; but when the boys were gone, he was chastised himself if he had punished them either with too much severity or remissness. (Plutarch, *Life of Lycurgus*, 18)

THE SCHOOL DAY

The schools of Sparta were boarding schools (Plutarch, *Life of Lycurgus,* 16). The students woke early and were subjected to strict military drills and discipline throughout the day. They took their meals at dining halls and slept in the barracks. They were monitored throughout the day and allowed no individual freedoms. After supper, they would gather together to hear stories of military heroics or were asked questions to which they were expected give an answer which demonstrated judgment, no doubt a type of judgment that was in keeping with the emphasis on military strength and collective glory rather than a moral or ethical judgment (Bowen, 1972, p.54; Marrou, 1964, p. 22-23).

In time, Sparta became nothing more than a military barracks (Marrou, 1964, p. 18-19). The lack of cultural development demonstrated during the period of Spartan dominance was not to be carried over to the Athenian period, although the shift from the emphasis on physical training did not happen immediately. However,

once political dominance shifted to the city of Athens, the militaristic characteristics the Spartan classroom were replaced with artistic aspects.

OLD ATHENIAN EDUCATION

The term *hē archaia paideia* was used by Aristophanes in his play *Clouds* to mean the system of education in Athens before the influences of the Sophists and Socrates in the late fifth century BCE. During the period of Old Athenian Education, the schools in Athens, as in other Greek cities, maintained a strong focus on the physical development of the child but unlike the rigidly defined Spartan system with its categories for each age group and militaristic aims, Athenian education was much less defined and perhaps less rigorous. Learning sports and games, singing and playing a lyre or flute prepared the student for the contests and games that were a part of Athenian society, not the military. At the beginning of the period, education was primarily designed for the upper class of Athens, the aristocracy, but as a new political and social democracy grew, education was no longer reserved for the aristocracy but was expected for every child (Marrou, 1964, p. 40). Eventually, the curriculum of the Greek school was expanded to include music, reading and writing along side gymnastics (Marrou, 1964, p. 40-43; Bowen, 1972, p. 80-82).

THE CLASSROOM

The writings of the Greek historians give some mention of the classrooms during this period. Herodotus wrote that in 496 BCE there was a school with one hundred and twenty boys learning their letters. The roof of the building collapsed, killing all but one student (Herodotus, *The Histories*, VI. 27). Another accident was

recorded by Pausanias who said that in 491 BCE, a person by the name of Cleomedes was accused of foul play during a boxing match To seek revenge for the assignation of his character, he attacked a school which contained about sixty boys, and pulling down a column, caused the roof to cave in (Pausanius, *Description of Greece*, VI ix. 6-7) A third reference comes from 413 BCE, where Thucydides records that when the Thracians plundered Mycallessus "they killed the inhabitants and ravaged especially the largest boys' school in the town, slaying every one of the children in it" (Thucydides, *History of the Peloponnesian War*, VII xxix. 5)

These historical references indicate that schools were established and apparently well attended by the fifth century BCE The reference to the "largest boys' school in the town" indicates that there was more than one school in Mycallessus In addition to the written records, the pictures on jars and pottery show the classrooms of Greece. School scenes first appear on pottery around the beginning of the fifth century BCE and become common from about 475 BCE onwards (Beck, 1975, p 14) One such early pottery piece shows a picture shows a boy standing before a seated master with tablets and stylus.

Figure 4-1
A boy and his teacher (Beck, 1975, p. 6)

Lessons took place indoors and out of doors. Indoors, classes took place in two different types of rooms. Instruction in the physical component of the curriculum, *gumnastikē* was carried out in a *palaistra*. Although the words *palaistra* and *gymnasion* are sometimes used loosely and interchangeably by Greek writers and historians, the buildings were distinct and instruction for the schoolchildren took place only in the *palaistra* (Lynch, 1972, p. 34-35; Marrou, 1964, p. 40)[29]. Some *gymnasia* did have *palaistrai* attached to them, especially in the Hellenistic period. During this period, *palaistrai* were mostly privately owned whereas gymnasia were public; *palaistrai* were quite numerous in Athens whereas there were only three *gymnasia* in Athens right up to the classical period (they were the Lyceum, the Academy and the

[29] For a discussion of the linguistic uses of the words, Lynch goes into some detail in his book on page 35.

Cynosarges[30]); and the *palaistrai* were simple structures while *gymnasia* were "elaborate, monumental buildings" (Lynch, 1972, p. 34). Some of those teachers who owned a *palaistra* could offer, or arrange for, all branches of instruction to be given in one building (Beck, 1975, p. 14) although more often a child would move to another location to be taught music, and when it became part of the curriculum, writing.

A child practised in the *gymnasion*, in particular after he reached fourteen, the age when instruction was no longer provided in the *palaistra*. In fact, the "leisure time (*scholē*)[31] a young man spent (*diatribein*) at a public gymnasion was an essential component to the previous formal schooling in gumnastikē that he had received in a palaistra" (Lynch, 1972, p. 35).

Instruction in the other component of the curriculum, *mousikē*, sometimes took place in *didaskaleia*, structures designed primarily as classrooms, if the teacher owned such a room. Otherwise, instruction in music took place in any structure or out of doors (Lynch, 1972, p. 34).

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[30] By the beginning of the fourth century BC, the gymnasion had developed into an important feature around which many activities centred. Individual teachers eventually set up their schools adjacent to the various gymnasia and two took over their names: Plato's Academy and Aristotle's Lyceum.

[31] The Greek *scholē* means leisure as well as unemployment or lack of business and later came to mean a learned discussion and a school (Morgan, 1946, p. 4).

THE CURRICULUM

Instruction in the Old Athenian schools consisted of two major parts, "gumnastikē for the body, mousikē for the soul" (Plato, *Republic*, 376e) The physical, *gumnastikē*, was unlike the military training of the Spartans and some historians question if physical training in the schools was in anticipation of military service or for games like the Olympics. Marrou believes that gymnastics and athletics provided the physical training necessary to prepare the boy for athletic contests and "the only effective training for war came indirectly" (Marrou, 1964, p 38). There seems to be no consensus on this (Marrou, 1964, p. 37) although sometime later there was a system of compulsory military training, known as *ephebeia*, for young men between the ages of eighteen and twenty, which existed apart from the regular schooling system (Bowen, 1972, p. 84-85)

There were games for children for the first time at the Olympic Games of 632 BCE. This suggests that by 632 BCE there may have been a program in the schools where these skills were taught It is known that racing, discus, the javelin, the long jump, wrestling and boxing were taught in the schools (Marrou, 1964, p. 39).

Besides physical instruction, the Athenian child received instruction in *mousikē* *Mousikē* signified all the activities presided over by the muses (Bowen, 1972, p. 82), but its chief components were instruction in vocal and instrumental music. Music was very important to the early Athenians, Plato said of them, "Anyone who cannot take his place in a choir is not truly educated" (Plato, Leg. II 654ab cited in Marrou, 1964, p 41) A singing lesson is shown on an early fifth century cup in Figure 4-2. A chorus is shown practising in Figure 4-3 and in another scene, shown in Figure 4-4, the pupil is standing in front of the teacher who is playing a flute.

Figure 4-2
A singing lesson (Beck, 1975, plate 114)

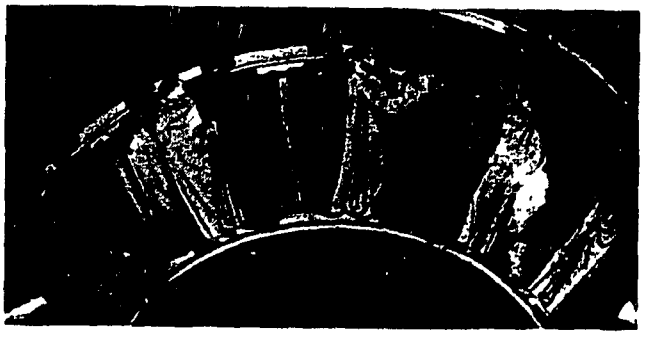

Figure 4-3
A choir practising (Beck, 1975, plate 115)

Figure 4-4
A music lesson (Beck, 1975, plate 117)

Lessons in learning to play a musical instrument are frequently depicted on pottery dating to this period (Beck, 1975, p. 24). The lyre was used as a symbol for music instruction and was probably the most common instrument although the flute (Beck, 1975, p. 24) is also shown in pottery pictures (see Figure 4-4), but much less frequently. Some pictures show a flute case hanging on the wall (Beck, 1975, p. 23-24; see Figures 4-1 and 4-4). Pictures of the music lesson usually show the master and student facing each other, and both often are playing an instrument (Beck, 1975, p. 24; Beck, 1975, Plate 123, 126, 128, 100, 101). This suggests that the lesson was a practical one. If musical theory was taught it was not considered worthy of capturing in a picture; there are no papyri or ostraca showing any written form of the music lesson.

Eventually, *mousikē* broadened to include instruction in writing Another teacher, the teacher of letters, was introduced (Marrou, 1964, p 42) When this occurred is unclear, although Marrou believes it to have happened sometime before ostracism was introduced by Cleisthenes in 508-507 as ostracism would seem to require a knowledge of writing by the citizens However, some ostraca unearthed from the Agora at Athens were apparently mass produced as analysis shows the handwriting on many to be the same (Cole, 1981, p 222) This may be evidence of illiteracy, or perhaps some could read but not write (Bowen, 1972, p 76) Inscriptions in stone were erected in public places, some of which displayed public laws Bowen believes this is evidence of a literate populace, as "surely no minority would display the laws and public records if it wished to keep the populace ignorant" (Bowen, 1972, p 76)

THE STUDENTS

Children began attending school at the age of seven Some historians believe the schooling ended for the child at age fourteen (Marrou, 1964, p 38) while others say children attended until the age of eighteen (Freeman, 1969, p 53) Schools were originally reserved for the sons of the aristocracy, the wealthy land owners (Marrou, 1964, p 38), but gradually citizens gained access to the privileges once reserved for the aristocracy, including access to the *gymnasion* and school Although a child may have been permitted to attend school not every family could afford the tuition to send a child However, the newly rich were now able to send their children to school along side the children of the aristocracy

The extent of literacy among the citizens of Hellenic Greece is unclear (Cole, 1981, p 221-222) and whether or not there was literacy among women the question also remains unanswered[32] It is generally accepted that women did not participate in the political life of Athens (Cole, 1981, p 221) but this does not necessarily mean they were illiterate Paintings on vases dating back to 450 BCE show women with papyrus rolls Of the thirty-two examples which definitely show women with papyrus rolls, nineteen (dating to 360 BCE) show women who can be identified as Muses and thirteen (dating to 390 BCE) show women in domestic settings (Cole, 1981, p 223, see also a discussion in Beck, 1975, p 55-57) Excluding those pictures of Muses, scenes of ordinary women with papyrus rolls are almost as common as pictures of boys and men with papyrus rolls (Cole, 1981, p 223, Beck, 1975, p 55) The fact that these pictures were of domestic settings suggests that reading may have been a normal activity (Cole, 1981, p 224) and not reserved for religious or political matters None of the vases show women or girls in the actual act of writing Evidence for regular instruction in reading and writing for girls during this period is also sketchy One vase (see Figure 4-5) shows a girl, accompanied by another girl, carrying a writing tablet This scene has been interpreted as showing a young girl on her way to school (Beck, 1975, p 56), but Cole correctly points out that although it might indicate the girl can write, it does not necessarily follow she is going to school (Cole, 1981, p 226) But, the important fact remains that she is carrying a writing tablet, a symbol and instrument of reading, we can only speculate that she may be heading to school She appears reluctant

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[32]For a discussion see Cole, 1981, Foley, 1981b, Pomeroy, 1991 and Lefkowitz and Fant, 1982

Figure 4-5
Girl carrying writing tablet (Beck, 1975, plate 350)

The evidence provided by Greek tragedy regarding the question of women's literacy and schooling is inconclusive but widely discussed (see Foley, 1981b; Zeitlin, 1981). There seems to be only one woman in Greek tragedy who we can say with certainty knows how to write. Euripides's Phaidra in *Hippolytus* writes a note.

Two women, Sapphos and Aspasia, deserve mention. Sapphos was a lyric poet in fifth century Greece, and although "she may have been quite untypical in her power to achieve a literary life" (Winkler, 1981, p. 86) it may also be true that other women were literate without embarking in a literary career. She may have presumed an audience for her poetry to include the women of Lesbos[33]; a pottery scene shows

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[33]Sappho lived on Lesbos, an island in the Aegean Sea, with a group of young women whom she instructed in artistic and physical matters (Marrou, 1964, p. 34-35) in what has been described as a "kind of finishing school for young ladies" (Flacelière, 1965, p. 112). Some girls lived on Lesbos from a young age, but most came when they were in their late teens (Garland, 1990, p. 193). Whether the "emotional lesbianism" of Sappho's poetry has any physical component has been widely discussed (Winkler, 1981; Stigers, 1981).

Sapphos reading "in the presence of her pupils (Beck, 1975, plate 366, see Figure 4-6) Aspasia lived in the fifth century and was "reputed to have been a great intellectual influence" (Cole, 1981, p 225), and especially well known for composing stirring orations. Although reports of her technique are sketchy and focus on the delivery rather than the composition of the speeches (Plato, *Menexenus*, 235e-236c), they presume a literacy. Socrates said that she was his teacher of rhetoric (Plato, *Menexenus*, 326 a). Despite these cases of literacy, we are left wondering about the extent of education for girls in fifth century Greece.

Figure 4-6
Sappho reading to her pupils (Beck, 1975, plate 366)

THE STAFF

Each aspect of the curriculum had its own teacher: *gumnastikē* was taught by the *paidotribēs*[34], *mousikē* was taught by the *kitharistēs* and eventually, once writing was introduced, the teacher of letters was added (Freeman, 1969, p. 50).

TRANSITION TO HELLENISTIC GREECE

During this period the roots of the mature form of the Greek school were set down. The curriculum had expanded to include *mousikē* after the period of Spartan emphasis on physical education. Writing would soon become prominent in the school curriculum as it was in Sumer and Egypt. The classroom moved out of the military type barracks. Pictures of school scenes are common on pottery and provide us with many of our ideas about the classroom during this period. The classroom seems to be a popular theme for the Greek artists; this would seem to indicate they were proud of a culture that supported literary training. We will look at the Hellenistic classroom which became a model for classrooms developed by other civilizations, such as the Roman (Bowen, 1972, p. 15) after Greek civilization had declined.

HELLENISTIC EDUCATION

During the Hellenistic period which began at the end of the fifth century BCE, the school became the "centre of the Hellenistic Civilization" (Marrou, 1964, p. 97) and the form of the school that developed during this period remained unchanged for

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[34]Greek athletes exercised without clothing (Gk. *gymnos*, naked) or wearing only a loin-cloth. Instead of soap, they used oil for general cleansing as well as massage. This accounts for the name of the gymnastic teacher, *paidotribe*, which means "boy-rubber" (Bowen, 1972, p. 84).

centuries (Bowen, 1972, p 152; Marrou, 1964, p. 96). Aspects of the educational system were influenced by individual educators and philosophers, as well as a group of teachers called the Sophists, during the fifth and fourth centuries BCE. The influences of these people, while not entirely confined to higher education, were most notable in the creation of schools of higher learning for adults during Hellenistic Greece. Because this study focuses on the classroom education of children, their contributions will not be emphasized.

In the preceding chapters on the ancient schools of Sumer and Egypt, I have tried to show that the first goal of the schools was to train scribes. It was around reading and writing that the curriculum was based, the design of the classroom, the selection of teachers and the teaching methods. The curriculum was designed with the clear understanding that the objective of the school was to produce a person who could read and write. The design of the classroom in Sumer and Egypt also indicated that the room was to be used in instruction of these scribal skills; there was no indication that any physical activity, for example, would take place in a room with rows of seats as was found in Mari. It was not until the Hellenistic period that the same thing can be said for the education system in Greece. As it became the goal of the school to produce someone who could read and write, the Greek school room and what went on inside it became very similar to those Sumer and ancient Egypt and not unlike the classrooms which followed in medieval and modern times. What follows is a discussion of the mature Hellenistic school, beginning in the period following the deaths of Aristotle and Alexander the Great.

THE CLASSROOM

There may have not been rooms especially designed as classrooms, or at least the rooms appear to have had very few unique furnishings. Students did not require a table for writing on their tablets; pottery pictures dating to this period show schoolchildren sitting on stools or benches, balancing their writing tablets on their knees or holding them in their hands (Barrow, 1976, p. 39; see discussion under school texts, page 153 and Figures 4-10 and 4-11). Furnishings were simple in all respects; one classroom is described as having "a few chairs, an armchair with slanting legs, in which the master himself sat pontificating - and backless wooden stools for the pupils" (Marrou, 1964, p. 145). Students gathered around the teachers as shown in pottery pictures such as that below.

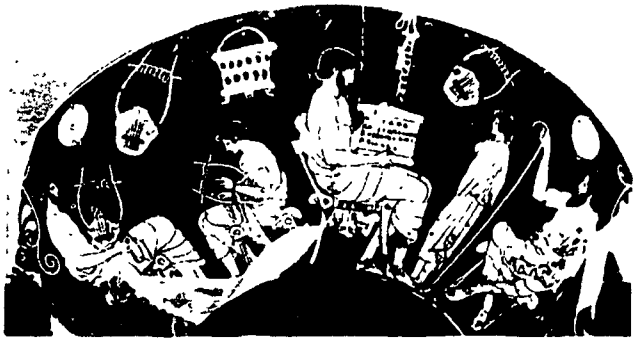

Figure 4-7
A reading lesson (Beck, 1975, plate 53)

Private buildings continued to be used for much of the teaching as was the case in the Hellenic period, although the *gymnasion* remained public and some aspects of the curriculum were taught there. The words *gymnasion* and *palaistra* become more intertwined during this period; some palaistra were attached to the *gymnasion* and

publicly owned and controlled during this penod (Bowen, 1972, p. 152; Beck, 1975, p. 14).

On the walls of some rooms were found miniature bas-reliefs of the main scenes of the Homer's epics. Under the pictures were captions identifying the main characters and giving a description of the scene (Marrou, 1964, p. 165). These would seem to be teaching aids to help introduce the stories of Homer to the students.

Classes for the child may have also been held out of doors. One picture shows a singing lesson taking place out of doors, a tree representing the open air (see Figure 4-2) and another depicts a geometry lesson taking place outside (Figure 4-8).

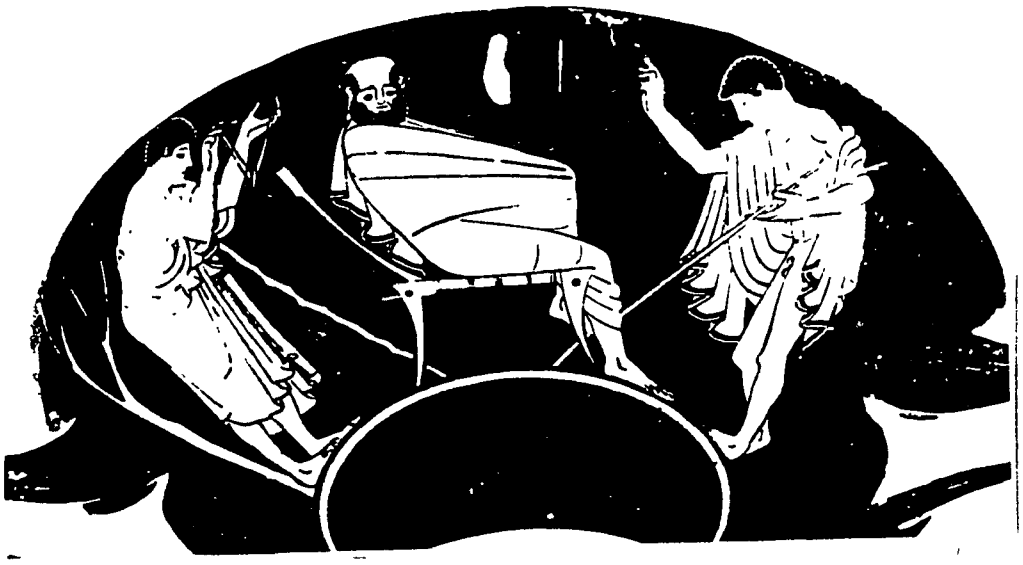

Figure 4-8
A geometry lesson (Beck, 1975, plate 84)

At the age of 18, a Greek male was given the legal status of *ephebos* and began "gymnasion training in earnest" (Bowen, 1972, p. 85). Eventually, physical education may have been replaced to a certain extent with lectures and lessons in philosophy and rhetoric, Marrou suggests. A separate room, a small indoor theatre,

was built onto the gymnasion for the purpose of giving these lessons, and by the second and first centuries it came to be known as the auditorium or lecture hall (Marrou, 1964, p. 186).

SCHOOL TEXTS

Within the Athenian school system, the children used various kinds of writing materials. As in Egypt, it seems that children progressed from using cheaper materials that could be reused when their writing skills were rudimentary, to more expensive papyrus as they became more proficient.

Young children used wooden tablets, most often covered with wax, in much the same manner as the Egyptian children used wooden boards covered with gesso. The tablet used by Greek children was quite small, about six inches by four inches and usually covered with a dark wax (Barrow, 1976, p. 39-40; Bowen, 1972, p. 80-81; see Figure 4-9) while at other times the student wrote directly on the whitened surface of the tablet using ink (Beck, 1975, p. 16; see Figure 4-10). It sometimes had a hollow frame enclosing the waxed surface (Marrou, 1964, p. 216; see Figure 4-10 and Figure 4-15).

Figure 4-9
A waxed writing tablet (Beck, 1975, plate 36)

Figure 4-10
A student's writing tablet with a handle (Beck, 1975, plate 33)

Pottery pictures show children with these rigid wooden tablets on their knees (Barrow, 1976, p 39, Beck, 1975, p 16, see Figure 4-11) or supporting them in their left hand (Figure 4-12) and there are scenes of the schoolchildren carrying their tablets to school (Figure 4-13)

Figure 4-11
Schoolchild with tablet in lap (Beck, 1975, plate 72)

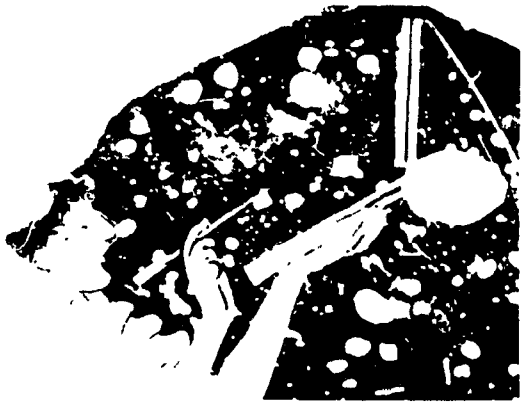

Figure 4-12
Schoolchild with tablet in hand (Beck, 1975, plate 42)

Figure 4-13
Schoolchild carrying tablets to school (Beck, 1975, plate 61)

These wooden boards were sometimes hinged together with "a single piece of string passed through a hole" (Marrou, 1964, p. 216). This string may have served as a handle (see Figures 4-7 and 4-11). The Egyptian writing boards also had a hole, but as there were no examples of the boards being tied to one another, the hole in the

Egyptian board was presumedly used to hang the board from the wall (see page 93). It could be, however, that the Egyptians also strung boards together.

A stylus was used to scratch letters into the wax. Some styli had a rounded or splayed end that could be used as an eraser on the wax (Marrou, 1964, p. 216; Bowen, 1972, p. 73).

Papyrus was available, but was expensive and reserved for the use of advanced students (Bowen, 1972, p. 47). Teachers' manuals were written on scrolls made from papyrus and both older students and teachers are shown in pottery scenes reading the inscribed scrolls (see Figures 4-7 and 4-14). Marrou says that it seems certain that papyrus was used in schools,

> either in single sheets or in broadsheets sewn together with string to make exercise books. But papyrus was always comparatively expensive and scarce, so that even though both sides were used in schools fragments of pottery were often used too. (Marrou, 1964, p. 216).

However, there are very few pictures showing students writing on papyrus so it may not have been widely used for written school work. It was probably reserved for school manuals which were prepared by the teacher and served as models from which the students copied. Marrou describes one such papyrus document, which when unrolled,

> begins with the simplest kind of lessons - syllables, and probably even the alphabet - and at the end has become an anthology of really difficult pieces of poetry. It must have taken several years to get through. Now materially it is simply a fragile strip of papyrus about nine and a half feet long, made up of sixteen sheets . . . joined end to end. (Marrou, 1964, p. 154).

Figure 4-14
Reading from papyrus (Beck, 1975, plate 77)

CURRICULUM

Primary School Curriculum

At the primary school, children between the ages of seven and fourteen were taught reading and writing, physical education and music (Marrou, 1964, p. 116, 138; Bowen, 1975, p. 152-153). Sometimes drawing was included (Aristotle, *Politics*, VIII,iii, 1337b23) and "reckoning", or counting might have also been included (Bowen, 1972, p. 153). Over time, it seems that more and more time was taken up with reading and writing, and physical education was pushed aside.

Artistic training during this period included drawing and dancing as well as instrumental and choral training (Marrou, 1964, p. 133). Although Aristotle says that drawing should be taught to the young child, little is known about this part of the curriculum. It has been suggested that the human figure was the model used in most lessons (Marrou, 1964, p. 133) although there is an absence of any drawing lessons depicted on pottery which may indicate they were not common.

Pottery scenes of musical instruction which were common in the Hellenic age became increasingly rare during the Hellenistic period (Beck, 1975, p. 24) and despite Aristotle's rationale for including it in the curriculum (Aristotle, *Politics*, VIII, iii, 1338a37, 1340b10), it may have eventually been excluded from the curriculum as private training in music became more common (Marrou, 1964, p. 138). This may have also been the case with physical training. Although it was taught at the beginning of the Hellenistic period, it became less common towards the end of the period (Marrou, 1964, p. 138).

Secondary School Curriculum

Between the ages of 14 and 18 the child attended the middle school (Bowen, 1972, p 152), also called the secondary school (Marrou, 1964, p 103) This was a new stage of schooling in Hellenistic Greece, it is generally believed that the Hellenic period had no formal schooling for children beyond the age of 14 (see page 144) The secondary school was created in response to the teachers of schools of higher learning, like the Sophists and philosophers, who sometimes demanded that students had a "period of intervening studies" (Bowen, 1972, p 154) before being accepted into their school, although they would sometimes accept students with only primary schooling (Bowen, 1972, p 154)

The curriculum included literature and mathematics (Bowen, 1972, p 156, Marrou, p 160- 195) Although Bowen says these were basically grammar schools (Bowen, 1972, p 156), Marrou suggests that grammar as we would define it today did not become part of schools' curricula until the beginning of the first century BCE when Dionysius Thrax produced a small book on the rules of "grammar" (Marrou, 1964, p 173) It was only a few pages long and was quickly adopted for common use, going through many editions and serving as the basic grammar [illegible] was eventually replaced in the twelfth century CE [illegible]

Composition was generally left to [illegible] learning, but by the end of the Hellenistic period [illegible] training in composition had been passed down to the secondary [illegible] lessons were

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[35]The manual defined the parts of speech and examples of nouns and verbs were given Other than that, it did not give examples or further discussion It was not until the third century CE that there are any examples of students doing exercises in grammar, such as conjugating verbs (Marrou, 1964, p 173)

in composing a short fable; the student often took a verse and converted it as closely as possible into prose. The next step was for the child to listen to a story given by the teacher and recreate it. The stories took only a few lines, no more than ten, but were required to include six elements - agent, action, time, place, manner and cause (Marrou, 1964, p. 173).

In the next step, a topic was given by the teacher to the student who was then required to create a short story in a set format. The story had to have eight paragraphs, always in the same order (Marrou, 1964, p. 174). Marrou gives an example of an exercise:

> Suppose he was given the following:
> "Isocrates says, 'The roots of education are bitter but the fruits thereof are sweet.'"
> This had to be treated in its proper order in eight paragraphs:
>
> 1. Introduction to Isocrates and a eulogy on him.
> 2. A paraphrase of his aphorism in three lines.
> 3. A brief defense of his opinion.
> 4. Proof by contrast, refuting the contrary opinion.
> 5. Illustration by analogy.
> 6. Illustration by anecdote - borrowed from Demosthenes, for example.
> 7. Quotations from old authorities in support - Hesiod, etc.
> 8. Conclusion: "Such is Isocrates' excellent saying about education."
>
> (Marrou, 1964, p. 174)

The literary component of the secondary school curriculum followed from what the child had learned in primary school, but never advanced much beyond simple exercises. As was the case in earlier training, the order of studies was strictly followed, and even within a subject area, there seems to have been little room for deviation judging by the manner in which composition was taught.

Plane geometry, based on Euclid's *Elements*, was the chief mathematical study of the grammar school (Bowen, 1972, p. 157). This is represented by a pottery scene of the geometry lesson showing an instrument resembling a compass (see Figure 4-8).

Pictures on pottery show youths taking part in sports - running, wrestling and dancing - and competing for prizes in athletics (Beck, 1975, p. 29) and boys and girls playing with balls, juggling sticks and playing with hoops. None of these events appear to be taking part in conjunction with the school (most school scenes include a symbol such as a tablet, a papyrus roll, or a sandal, which represents discipline). Exactly how much physical training went on in the schools is not clear; it was not an aspect of the educational system that was passed on to future civilizations and the latest literary references to palaistra were around 400 CE (Marrou, 1964, p. 131). Physical education does not seem to be a major aspect of the school curriculum in the Hellenistic period; it moved outside the school curriculum with the coming of professional athletes with full-time trainers (Marrou, 1964, p. 128; Beck, 1975, p. 29).

TEACHING METHODS

Primary School

In both the primary and secondary schools the most time was spent learning to read and write. The methods used to teach these subjects and others within the curriculum were systematic; each step followed from the previous and it seems that there was little deviation amongst the teachers despite the lack of any "handbooks of instruction" (Bowen, 1972, p. 153).

Children learned to read in a series of graduated steps. First came learning the twenty-four letters of the Greek alphabet, "one after another, not, as we do now, by their sounds, but by their names (alpha, beta, gamma, delta, and so on) and apparently without knowing what they looked like" (Marrou, 1964, p. 150). Actually many children today learn their letters in precisely the same way as the Greek children did, and not phonetically as Marrou suggests. The Greeks had a verse which included, in four lines, all the letters of the alphabet, perhaps like the alphabet song that small children learn today. There was also a "spelling drama" that seems to combine physical manoeuvring with learning the letters:

> There was a remarkable spelling drama by a poet called Kallias; in this there was a chorus of twenty-four. Each member of the chorus represented a letter in the alphabet, and postured as far as possible in the shape of the letter . . . .. As they sang the members of the chorus moved into position to form the syllables which they were singing. There seems even to have been some kind of plot in this remarkable drama. (Barclay, 1959, p. 114-115)

Once the child had learned the letters, the next step was to practise saying syllables. Letters were combined in every way possible to make syllables, and no words were taught until the syllables were exhausted. Lists of syllables were designed, first of two-letter then three-letter, then four-letter syllables. One method for creating these lists was used in the fourth century BCE and "involved putting a consonant - *v*, for example, or *β* or *λ* or *σ* - after each of the syllables in the preceding table. . . .. Or, conversely, the first consonant would remain unchanged" (Marrou, 1964, p. 152).

Once the syllables had been mastered, the students were taught words They started with mono-syllabic words and moved on to longer words Papyri exist which show these word lists, and some of the words are quite rare (Marrou, 1964, p 152) They seem to have been put on the list because they fit the category of being one syllable long or in the case of longer words, because they were difficult to pronounce (Marrou, 1964, p 150) Quintilian, writing in the first century CE, makes mention of these long complicated words calling them "bridles" or "muzzles" of the tongue It was thought that saying them quickly would train the tongue for clear enunciation and rid the child of any speech impediment (cited in Marrou, 1964, p 153) It may have been that children added these words to the lists; Greek children may have enjoyed tongue twisters as much as children today

Passages of text were then given to the child to read once the words were mastered Because words were run together, it was probably very difficult for the child to decipher the text although some passages designed for the beginner had the words broken down into syllables The order of lessons can be determined from the teacher's papyri and they indicate that after passages of text, the student was given short passages of poetry to read, followed by quite complicated pieces The child would memorize and recite these passages as described by Dionysius of Halicarnassus

> When we learn to read, we first learn the names of letters, then their shapes and values, then the syllables and their properties, after this the words and their inflections - their longer and shorter forms and their declensions Then we begin to read and write, slowly at first, and syllable by syllable When, in due process of time, the forms of words are fixed in our mind, we read easily and get through any book handed to us without stumbling, with incredible ease and speed (cited in

Bowen, 1972, p. 81; translated in and quoted by G.M.H. Grube, *The Greek and Roman Critics*, 1965, p. 222)

The same step-by-step method was used to teach the child to write. The child moved from writing letters to syllables to words to sentences and text. The writing system was a cursive style. Plato suggested how writing letters may have been taught when he says: "when children are not yet good at writing the writing-master traces outlines with the pencil before giving them the slate and makes them follow the lines as a guide in their own writing" (Plato, *Protagoras*, 326 D).

This passage has been widely interpreted, but most evidence suggests that the teacher would lightly scratch the shape of the letters into the wax tablet and first of all, guide the child's hand along the outline (Marrou, 1964, p. 217; Barclay, 1959, p. 116). In some cases it is likely that the teacher only provided the lines within which the child was expected to draw the character (Bowen, 1972, p. 80-81), as in the case of lined books nowadays which show the proper height of letters. Sometimes the teacher wrote each letter of the alphabet and the child would have to supply a word ending in a particular syllable (Marrou, 1964, p. 156).

Students would then be given passages to copy, many of which are attributed to Menander and Diogenes and were maxims for study. As was the case in ancient Sumer and Egypt, children were given sentences to copy that were meant to encourage them in their studies, maxims like "The learning of letters is the beginning of wisdom". Another sentence was "Homer was not a man but a god" (Marrou, 1964, p. 162). There are others that reflect the prejudices of the times. One passage goes as follows :"Seeing one woman giving advice to another, he said, 'The asp is buying

poison from the viper'" and another "Seeing a Negro defecating, he said, 'Hullo, a split cauldron!'" (cited in Marrou, 1964, p. 156).

The arithmetic taught to the primary schoolchildren did not extend much beyond counting. The letters of the alphabet were used to represent numbers; there were twenty-seven numerical signs, three extra symbols being added to the alphabet. This gave them three sets of nine signs, one set being used for the units, one for the tens and one for the hundreds (Bowen, 1972, p. 154). Multiplication were tables prepared; a tablet is shown in Figure 4-15 with a multiplication table on the left of it and on the right, a column of words showing divisions between stems and possible endings (Beck, 1975, p. 18).

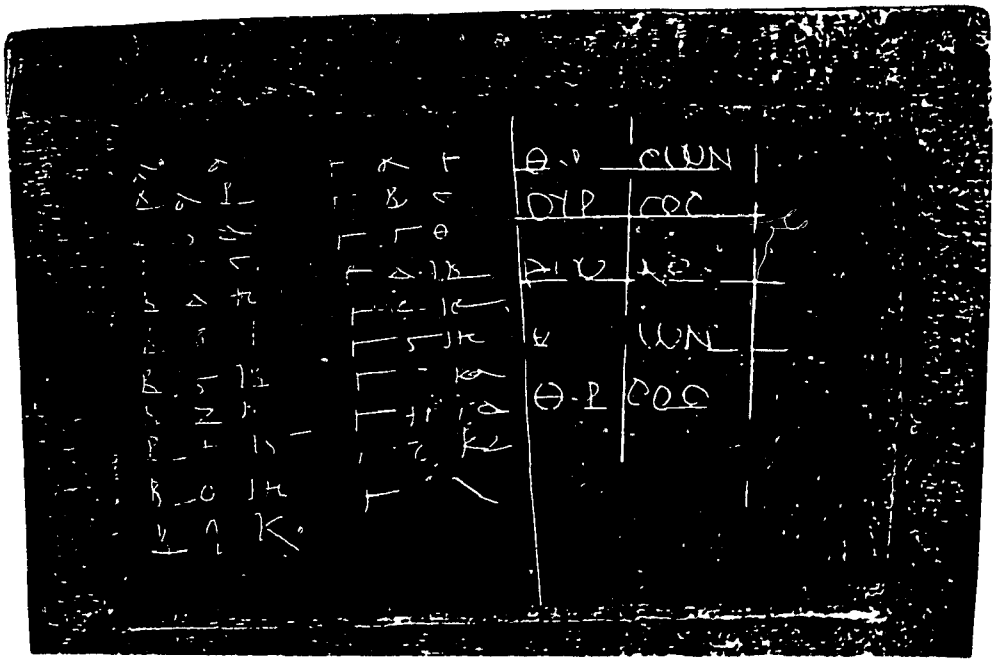

Figure 4-15
A multiplication table (Bowen, 1972, p. 193f)

Children learned how to count on their hands using a system where any number from one to one million could be represented using two hands. The system is still in use today in some Muslim countries[36]. As Marrou describes it,

> The last three fingers on the left hand indicated the numbers 1 to 9, according to the extent they were bent towards the palm. Tens were indicated by the relative positions of the thumb and first finger of the same hand. The right hand was used in the same way - first finger and thumb, last three fingers - to indicate hundreds and thousands. Tens and hundreds of thousands were indicated by the position of the left or right hand in relation to the chest, navel or thigh-bone. (Marrou, 1964, p. 157)

The abacus was used for teaching the pupil simple arithmetic (Barrow, 1976, p. 40) and children also used pebbles for counting (Bowen, 1972, p. 157). Although there is mention of the school master dividing apples into groups to illustrate fractions (Barclay, 1959, p. 123-124), this seems the anomaly. Calculations were for the most part beyond the ability of the primary schoolchild.

Pictures of teachers show them sitting, listening to students recite or read as was shown in Figure 4-7 and Figure 4-8. The teachers of physical education may have been more active, although instructions may have called out to the students. A papyrus dating to the second century CE contains a section of a teacher's handbook for a wrestling lesson:

> Get up close and put your right arm around his head!
> You, put your arms around him!

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[36]A discussion on finger counting is given by Tobias Dantzig in *Number* (1954). He shows a page from a 1520 CE counting manual with hand signs similar to those used by the Greeks (Dantzig, 1954, p. 2)

You, get hold of him from underneath!
You, move forward and hug him!
You, get hold of him from underneath with your right arm!
You, put your arms around him where he has got hold of you from underneath and bring your left leg up to his side!
You, push him away with your left hand!
You, change your place and clasp him!
You, catch hold of him by the testicles!
You, bring your foot forward!
You, get hold of him round the waist!
You, throw your weight forward and bend him backwards!
You, bring your body forward and straighten up: [pounce] on him and give him as good as you get! (Marrou, 1964, p. 124)

Secondary School

The methods for teaching the secondary school curriculum were similar to those in the primary school; students moved from reading easy text to progressively more difficult material in a step-like manner. Lists of classical writers, painters, and sculptors were in use by the second century BCE (Marrou, 1964, p. 161) and from these lists teachers would choose what would be studied. They would edit the works which would be included on the papyrus from which the students would study (Marrou, 1964, p. 161). In this way, teachers determined which works were passed down from generation to generation of schoolchildren much in the same way as editors do today for anthologies of writings that are prepared for students. The works of Homer were so popular that few school papyri and ostraca from this period do not contain some piece of Homer's work (Marrou, 1964, p. 163). Works of Hesiod and passages by Euripides, Menander and later Aristophanes were also studied.

Rote memorization of literary selections was common and was increasingly accompanied by the practice of oral reading from manuscripts (Bowen, 1972, p. 156; Marrou, 1964, p. 167- 169). Reading aloud helped to determine the meaning of

phrases and expressions given there was no punctuation The emphasis was placed on words and their meanings, there does not seem to be any real analysis of the ideas and emotions expressed in the works apart from the search "for heroic examples of 'human perfection' in the annals of the past" (Marrou, 1964, p 169)

Geometry was the height of sophistication of secondary school mathematics, and the only indication that the teaching methods extended beyond those used in the primary school is the picture of the compass used in the geometry lesson shown in Figure 4-8

THE STUDENTS

It is in the Hellenistic period that there is clear evidence for the schooling of girls although they may not have followed the same curriculum as the boys did[37] Cole believes girls may not have studied mathematics as there are no pictures of girls learning math (Cole, 1981, p 230-231) Mathematics instruction for boys was not commonly depicted on pottery either, so this seems inconclusive

There are quite a few pictures this period of girls reading and writing A gravestone of a young girl named Abeita shows her sitting in a chair and reading from a papyrus roll She died when she was nine, but apparently she already knew how to read (Figure 4-15)

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[37]For a further discussion of women's rôle in Hellenistic Greece, see Pomeroy (1975, 1984)

Figure 4-16
Abeita's gravestone (Beck, 1975, plate 359)

In the literature, women appear more frequently in situations where they are writing letters or reading notes (Cole, 1981, p. 233). Herondas presents a story of a mother who is frustrated by her son's laziness when she tries to help him with his homework. She marches him to school and demands that the teacher punish him. His grandmother is said to be a complete illiterate but the mother considers herself to be somewhere between the grandmother and the father (who is represented as the educational authority of the family) as far as education is concerned (Herondas, 3 cited in Cole, 1981, p. 233).

Within the literature, there was discussion about the education of girls and although some writers were supportive (Plato, *Republic*, 455), the attitude was not

universal as demonstrated by the words of Meander (c. 343 BCE - 292 BCE), a writer of New Comedy[38] (Cole, 1981, p. 227), who wrote:

> Teach a woman letters? A terrible mistake.
> Like feeding extra venom to a horrifying snake.
> (CAF III, p. 201.702: cited in Garland, 1990, p. 136)

There was a general increase in the educational opportunity for both girls and boys but it is likely that a good part of the population remained illiterate (Cole, 1981, p. 233-235). Although sometimes the school was endowed with private donations, for the most part the fees were paid by the family (Bowen, 1972, p. 152) which would limit access to those who could afford the tuition.

THE STAFF

Within each city there was appointed a director of education, the *gymnasiarchos* who was sometimes assisted by a deputy, the *paidonomos*. Within the primary school, reading, writing and arithmetic were taught by the *grammatistes*. The teacher of physical education was known as the *paidotribe*, and he was also responsible for instruction in diet and hygiene (Marrou, 1964, p. 123). The music teacher was called the *kitharistes*, from the Greek for lyre (Beck, 1975, p. 24).

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[38]New Comedy, as opposed to the old style of drama, developed after the death of Alexander the Great (Hunter, 1985, p. 9). It gave a "scenic representation of human life" (Allinson, introduction to Meander, 1930, p. xv) rather than presenting political or personal satire as was characteristic of the plays of Aristophanes, one of the dramatists of the previous style. New Comedy had "no chorus and little rhythmetical variety" (Hunter, 1985, p. 9).

Within the secondary school, the literature teacher was called the *grammatikos*, or grammarian This teacher enjoyed prestige and fees never enjoyed by the "lowly *grammatistes*" (Bowen, 1972, p 155) However much improved was the position of the *grammatikos*, teachers in general were not held in particularly high regard or paid very well

Money to support the schools came from tuitions, support from the city, and sometimes from benefactors Many cities assumed control of their schools as they did other municipal interests but the upkeep and maintenance of the schools became financial burdens for the citizens In some cities such as Miletus and Teos, foundations were established whereby wealthy individuals provided money for the maintenance of a schools (Marrou, 1964, p 104-112) Charters were established for the allocation of funds and interest "Polythrous gave his own city of Teos a sum of thirty-four thousand drachmae, which was invested at about eleven and a half percent and so gave an interest of nearly four thousand drachmae" (Marrou, 1964, p 112-113) Selection of teachers was outlined in the charters and money from the fund was used to pay the teachers' salaries In the city of Miletus, applicants for teaching positions submitted their names to an assembly of citizens who would elect teachers each year Sometimes, the teachers were chosen by the existing staff of the schools and their choices would be confirmed by the assembly (Marrou, 1964, p 113)

The pay was quite low in all cities, about the same as that for a skilled worker, but in many cities teachers did not even get paid regularly There were cases where teachers had to chase after their students' families asking for money, which did nothing to improve the status of the teacher within the community (Marrou, 1964, p 146)

In the case of private schools which still existed, those run by the *grammatikos* being the most popular (Bowen, 1972, p. 155), teachers were paid from the tuition of their pupils (Marrou, 1964, p. 114). This sometimes made collection difficult as parents would remove their children from class on those days when money was scarce, or during periods when there were fewer teaching days because of holidays.

In addition to being relatively poorly paid and having to aggressively collect their fees, the status of teachers within society was diminished even more because of their lack of standard qualifications (Marrou, 1964, p. 146). Other than being elected, there was nothing else required of the teacher and the primary school teacher was considered the least specialized and most lowly.

It seems that there may have been women teachers, at least for some subjects. "There are many representations of girls receiving dancing instruction" (Beck, 1975, p. 55) and in one of the scenes, two girls are being taught by a woman.

Figure 4-17
Woman teaching two girls to dance (Beck, 1975, plate 384)

One of the women is holding a narthex, the hollow stalk of a plant (Oxford English Dictionary) which was a symbol of instruction and discipline (Beck, 1975, p. 10-11, 55). This might suggest that the dance lesson was a classroom activity. It would seem significant that the representations of women teachers are in dance lessons scenes.

There was one other person who was not considered a staff member of the school but contributed to the schooling of the child and occurs frequently in pottery school scenes (see Figures 4-18 and 4-19). The *paidagogos* was a family servant whose main duty it was to accompany the child to school and back. He would carry the pupil's books and sometimes protect him along the route to and from school (Marrou, 1964, p. 144, 146). He was also expected to teach the child proper manners and morals and act as a tutor (Marrou, 1964, p. 144).

Figure 4-18
Paidagogos and child (Beck, 1975, plate 65)

Figure 4-19
Paidagogos accompanying boy, carrying stick and lyre (Beck, 1975, plate 68)

THE SCHOOL DAY

The school day began early for the young student of the primary school. At daybreak, the child would head to the school, sometimes with his or her way lit by a lantern carried by the *paidagogos* (Marrou, 1964, p. 148). The student first attended the *palaistra* for instruction in physical education, then took a bath and went home for lunch (Marrou, 1964 148) although in the rare case, a child might take his lunch at school (Freeman, 1969, p. 282).

In the afternoon, the child studied reading, writing and arithmetic. Eventually, physical education was replaced with additional training in these subjects (Marrou, 1964, p. 148).

Pottery school scenes show the child being punished or disciplined. Children were slapped with sandals which hung from the classroom walls in the pictures as symbols of the classroom (Beck, 1975, p. 44-45; Figure 4-20). Pottery pictures also show the student being slapped with a stick, the hand, a leather strap and a narthex. The narthex is shown on vases dating back to the fifth century BCE and is often, but not exclusively, associated with dancing teachers (Beck, 1975, p. 45; see Figure 4-17). One picture shows a child being slapped on the knuckles while his classmate receives a crown; this probably represents his loss in a musical contest, according to Beck (Beck, 1975, p. 46; Figure 4-21).

Figure 4-20
Discipline in the school (Beck, 1975, plate 268)

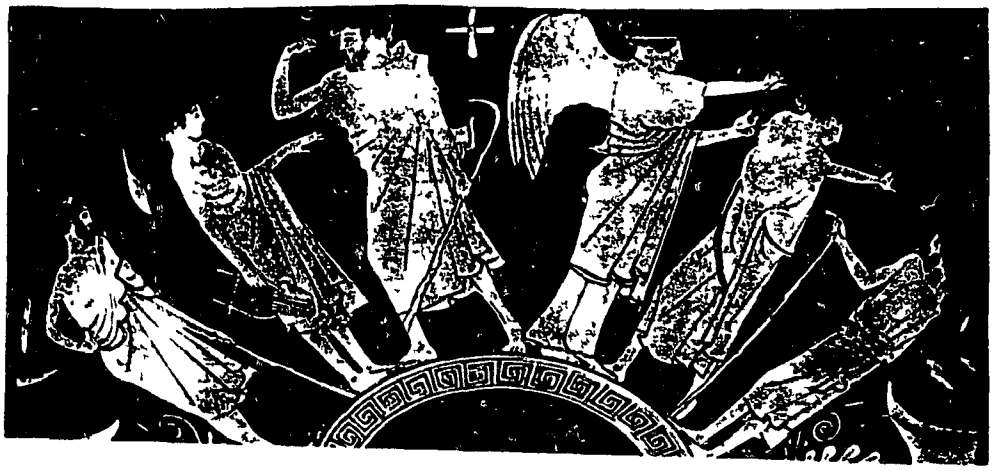

Figure 4-21
A slap on the knuckles (Beck, 1975, plate 273)

The school year did not follow a fixed schedule Every region or city had different civic holidays, and often honoured different gods An example of an academic calendar is given for the city Cos in the middle of the second century BCE Classes were suspended during festivals and examinations as noted below

4th Festival in honour of Poseidon
5th Ephebes' Sports Day
6th Procession in honour of the deceased King Eumenes II of Pergamus
7th Festivals at the sanctuaries of Apollo Cyparissios and the Twelve Gods
Children's sports examinations
10th Festival instituted by Pythocles in honour of Zeus Soter
11th Ephebes' Sports Day
12th Festival at the Temple of Dionysus
15th Festival at the Temple of the Delian Apollo
19th Procession in honour of the Muses
25th Ephebes' Sports Day
26th Procession in honour of the reigning king, Attalus II (or III)
29th School Examinations
(cited in Marrou, 1964, p 149)

This allowed the children two days for examinations and eight days off for festivals Children were also given holidays on their birthdays and on other days to mark family festivals Sometime just after a child started school, his hair would be cut to mark the end of early childhood, this was also a holiday (Marrou, 1964, p 149)

This chapter has attempted to look at the classroom in Greece from the earliest known civilization in the region, that of the early Minoans and Mycenaeans between 2000 BCE and 1130 BCE, to that of Hellenistic Greece, a period which lasted into the second century During this period the classroom continued to be a place where young people gathered to interact with their teacher The scribal lessons of Sumer, Egypt and probably Mycenaean classrooms were replaced with physical training during the period of Spartan dominance, but it was not long before the emphasis

shifted back to teaching children to read and write Children gathered in a variety of locations to listen to their teacher The pictures on pottery provide a glimpse of the classroom in the palaistra, the gymnasion and out of doors Children took their studies seriously it would seem, discipline was strict and mothers helped their children with homework Long rolls of papyrus that sometimes contained a complete course of studies were created by teachers as models from which the children would copy, usually on wooden tablets Now that we have looked at the classrooms of Sumer, Egypt and Greece, I hope to show that what went on inside those classrooms did not change in any important respect and the same things are happening inside classrooms today

Chapter 5: Conclusions

One would expect there to have been changes within the classroom over the past five thousand years However, my research suggests that the classroom has in many respects remained the same from the time of its invention in Sumer to the present day - it seems to have begun as a place where the culture of a society was passed down by adult teachers to the young and so it remains It might be expected that the classroom, as a place of communication, would be particularly affected by changes in communications technology Yet the evidence presented in the previous chapters suggests to me that life in the classroom has been fairly unaffected by new communications devices Communications tools have been introduced to the classroom as they have been developed, but what goes on within the classroom shows every sign of being largely independent of the communications tools used

As briefly discussed in the introduction (see page 1), historians of technology and communications have thought otherwise (Mumford, 1963, Innis, 1951, 1972, McLuhan, 1962, 1966, 1967) The link between technology and shape of a society has been examined by Lewis Mumford who believed that the technical apparatus used by a society changes the shape and course of a civilization In *Technics and Civilization* he describes how the invention of the clock changed civilization "by its essential nature it disassociated time from human events and helped create the belief in an independent world of mathematically measurable sequences the special world of science " (Mumford, 1963, p 155)

The relationship between communication devices and changes within a society has been examined by the Canadian historian Harold Innis He theorized that

changes in communication media change the habits of the members of a society and in doing so modify the structure and functions of the society In *Empire and Communications* (1972) and *The Bias of Communication* (1951), Innis examines the significance of communications media in not only the structure of civilizations, but their rôle in the development and decline of empires

He argues that 'hard' media, such as clay and stone, are those that are durable, what is written on them survives Large numbers of clay tablets from the Sumerian civilization have survived These hard media emphasize time and favour institutions that are decentralized and hierarchical in character (Innis, 1951, p 33)

'Soft' media are less durable and tend to be lighter, like papyrus and paper These media emphasize space rather than time, according to Innis That is, what is written on them does not have the same permanency as hard media, but soft media are more easily transported, being lighter and less cumbersome (Innis, 1951, p 33) Soft media favour more centralized administrations and those that are less hierarchical in nature (Innis, 1972, p ix, 5-6) Innis says that empires persist by overcoming the bias of media which overemphasize either time or space and flourish under conditions in which the civilization reflects the influence of more than one medium This is achieved when the bias of one medium towards decentralization is offset by the bias of another medium towards centralization (Innis, 1951, p 31)

Arnold Toynbee in *A Study of History* said that communications systems are crucial to the existence of universal states, those empires that "embrace the whole territory of a single civilization" (Toynbee, 1988, p 255) while curbing the decline of a civilization Marshall McLuhan, a student of Innis's, examined the effects of communications systems For example, he said that the printed word changed the

way people think It may also be that basic changes in how information is arranged and presented in books can affect thought patterns For example, once books were equipped with an index, everyone was required to know the order of the letters in the alphabet Today, accessing information in a library requires keyboard skills It also requires a knowledge of how the information available online is arranged, which in many cases depends upon how the person who developed the database thought about a subject

Having established that communications systems affect the establishment and duration of empires and how the members of a civilization think, we might expect that changes would be evident in the classroom as new communications systems were developed within the society As discussed in chapter 1, the introduction of new technologies has dramatically affected some institutions within society, factories for example (see pages 3 to 7), while having little or no effect on others, such as prisons (see pages 7 to 9) I think the transmission of culture that occurs within classrooms has little to do with the media of communication and has everything to do with type of interaction which takes place in a classroom where adult teachers attempt to pass on their culture to the young Communications technology is present in the classroom but seems to be beside the point In this way, it would seem the classroom might have more in common with the prison than the factory Any changes to the classroom are temporary and the traditional form of the classroom reappears, as was the case in the Canadian school system in the 1960s and 1970s (see chapter 1)

In essence, my argument is part biological Studies of baboons, chimpanzees and gorillas show that the transmission of the group's cultural traits is primarily a process of interaction between young individuals and old; the use of tools is peripheral

and only a small part of the culture that is transmitted (Schaller, 1963, deWaal, 1982 Maple, 1980) This is also indicated in anthropological studies, such as Margaret Mead's investigation of Samoan life (Mead, 1928) and studies of Australian aboriginals (Burbank, 1988) and the tribes of Papua New Guinea (Matthiessen, 1962)

One biological example is given by George Schaller in his account of the Mountain Gorillas of Rwanda The study indicates that infants of the family learn what to eat and the meaning of certain gestures and sounds by observing their mothers (Schaller, 1963, p 262, 267, 331) Infant and juvenile mountain gorillas engage in play which probably contributes to their learning, Schaller notes that many play time activities mimic adult behaviour The babies watch and imitate the adults, and thereby acquire the skills for survival I saw baby gorillas copying the behaviour of adults during a visit I made in 1988 to Rwanda to observe a group of gorillas My companion and I travelled to the Parc National des Volcans, the site of the mountain gorillas studied by Schaller and later by Dian Fossey (Fossey, 1983), where we joined a group of biologists and a veterinarian We began our search for a family of gorillas with a trek through dense jungle, made easier and perhaps safer with the assistance of park rangers, one with a machete leading the way and another with a rifle bringing up the rear Our guides followed the route of abandoned nests and spoor the gorillas had made since they were last spotted a few days earlier In a few hours we came across the gorillas We crouched down in the vegetation and remained very quiet, having been previously instructed not to make any human sounds so the gorillas would not try to imitate us We tried to be as unobtrusive as possible, we had chosen beige and green clothes so that we could blend into the rain forest

As we watched, the adult gorillas remained fairly stationary, except for the silverback male who acknowledged our presence by beating on his chest and screaming. We lowered our eyes and maintained a crouching position and he went back to eating and roaming. The others seemed to be absorbed in the task of stripping off the outer layer to chew on the fresh tasting centre of celery stalks which was growing along the ground. I tasted it and it reminded me of the taste of small peas straight from the pod.

The gorillas made a low grunting "Humph" sound every so often. The sound of the baby gorillas' voices was much higher pitched, especially during play. While I observed, their play consisted of climbing trees in the dense jungle, and jumping to the ground, rolling when they landed. This seemed to greatly amuse the young gorillas, but they could not get much of a response from the adults other than an occasional "Humph". However, there was a sense that the adults were constantly aware of where the young gorillas were at any moment, and that the young gorillas were always watching the adults for approval. The adults' "Humphs" seemed to reassure the youngsters that the adults were close by. There was a strong sense that the young gorillas were watching the adults every bit as carefully as the adults were aware of the actions of the young.

Studies of aboriginal societies in Australia also indicate that "children learn primarily through contact with and observations of other people" (Burbank, 1988, p. 21). Girls accompany their mothers while collecting food and learn where and during what seasons certain plants and animals can be found. Boys learn how to use the fishing spears and how to track animals by accompanying their elders on hunts. The

stories told by the elders instruct the children in the ways of the society, how it is organized and the hierarchy of positions (Burbank, 1988, p. 21-22).

Margaret Mead's study of the adolescents of Samoa in *Coming of Age in Samoa* tells a similar story[39]. The education of children of both sexes focuses on making them into useful members of the Samoan community. Little boys learn techniques of fishing; little girls are kept busy tending the babies, while also learning such things as weaving, fetching water and waiting on the chief (Mead, 1928, p. 26-27). There is no explicit teaching of the skills needed to use tools, although the Samoans use tools for fishing. While the boys are helping the men prepare for fishing, the girls learn how to care for the youngsters by mimicking the actions and vocalizations of the women of the village. Mead makes no mention of children being "taught" to perform any of the tasks they perform, although their tasks are useful and contribute to the success of the community. "Samoan children do not learn to work through learning to play, as the children of many primitive peoples do," Mead notes

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[39]Margaret Mead's study of life in Samoa has come under fire from Derek Freeman (1983) who presents a different picture of Samoan life. His evidence contradicts Mead's basic conclusion that adolescence in Samoa was less stressful and stormy than the adolescence of Americans. In presenting this "negative instance", Mead's book became the rebuttal to the notion that strife during adolescence was inevitable, and this idea and her book gained a great deal of popularity in the late 1920's, a popularity that continued for many decades. Freeman gives convincing evidence that Mead's findings were tainted by her strong belief in cultural determination, a belief which came in large part from her association with Franz Boas, the celebrated anthropologist at Columbia University, as her mentor (Freeman, 1983, p. 4-5, p. 19-82). She did not live with a Samoan family, and her lack of knowledge about the language prevented her from understanding the nuances of communications (Freeman, 1983, p. 200-201). Although Freeman presents evidence that contradicts most of what Mead had to say about Samoan life, he does *not* dispute Mead's description of children's learning to perform tasks. In fact, in one of the rare instances where he agrees with Mead's findings, he says that Mead is correct in saying that small children are often given over to older girls for care (Freeman, 1983, p. 202). It is her conclusion that no strong bonds are formed by children which he disputes. He makes no mention of the activities of boys in this respect.

(Mead, 1928, p 226) It is through active involvement in the tasks given to them that the children grow and come to take on more tasks befitting their greater stature

Peter Matthiessen spent the spring and summer of 1961 with the Kurelu tribes of New Guinea, about seven years after the tribe first had contact with white people He writes of his experiences with the warriors, swineherds and other members of the tribe in *Under the Mountain Wall* In this "stone age" culture where spears were the tools of both war and hunting, children played games that most often centred around tossing sticks and branches These games of tossing and throwing were not restricted to boys, little girls are described "throwing twigs at dragonflies, they threw delicately, from ambush, as the dragonflies zipped by " (Matthiessen, 1962, p 239) In this case, the children's games did mimic the adult work of hunting or war, but children were not taught specifically to use spears Instead, the use of sticks in the games they played helped the child acquire skills such as aiming and throwing What these studies show is that the efficacy of the tool is an issue of secondary importance In other words, it does not seem to matter if the tool works well, what matters is that the young learn to use it

MY ARGUMENT: A CHANGE IN THE MEDIA USED DOES NOT CHANGE WHAT HAPPENS INSIDE THE CLASSROOM IN ANY FUNDAMENTAL WAY

In each of these biological and anthropological examples, the young were instructed by example in the important aspects of their culture by the adults but the tools used were of secondary importance In the classrooms throughout history, perhaps this has also been the case I suggest that the classroom has remained remarkably resistant to the effects of changing technology, especially changes in communications media Whereas other aspects of society have been affected by shifts in technology as predicted (see pages 1 and 178), it seems that the classroom has been one of the most persistent institutions in society, remaining in much the same form as when it was invented 5000 years ago

First, the question what happens inside the classroom will be addressed I will attempt to show that the classroom has always been a place where the culture of a society is transmitted by the teachers to the young

Second, I suggest that the means by which the classroom transmits the culture of a society has remained the same The transmission of culture is achieved, I suggest, through personal interaction between the teacher and the student, and by the teacher providing a model to the student

Third, the question of why the classroom has not changed will be addressed I will attempt to show that teachers cling to methods that will preserve their positions of control and power over the students These methods include discipline and pedantry, examples of which are found in the classroom structure, textbooks used, and instructional techniques The interaction that occurs between student and teacher

is hierarchical, and designed to instill in the student an awareness of social structures of control

CLASSROOMS HAVE ALWAYS BEEN THE PLACE WHERE THE CULTURE OF A SOCIETY IS TRANSMITTED

The insignificance of the communication media in shaping the classrooms may have been anticipated by those who predicted change if the biological examples had been examined For example, it is important for the gorillas of Rwanda that the adults teach the young gorillas such things as what to eat and how to prepare it and how to make a nest and sit quietly in it (Schaller, 1963) These are some of the important aspects of the mountain gorilla culture that must be passed on to the young to ensure the survival of the species In the same manner, the Samoan culture was passed on to the Samoan children by the adults as the children watched and mimicked the adults (Mead, 1928) In each of the classrooms - the Sumerian, the Egyptian, the Spartan and the Athenian - it is apparent that what went on inside the classroom was the transmission of the society's culture to the young members of that society The tools used to accomplish this were secondary, what was most important was that the elders of the society pass on to the young those aspects of the culture that distinguished the civilization

The Oxford English Dictionary defines culture as the "intellectual side of a civilization" Culture is usually taken to mean the state of manners, values, taste and intellectual development of a society at a certain time and place The culture of a

society is that aspect which distinguishes it from other societies of different times or places[40]

The civilizations of Sumer and Egyptian were characterized by their use for the first time in history, of a system of writing Along with the development of a "formal system of education", the invention of writing was the greatest accomplishment of the Sumerians (Kramer, 1963, p 229) The Egyptians contributed to the development of writing by providing a more suitable medium and a series of characters more easily understood by the general population The development of a written language characterized many of the developments of these people For example, people afforded the laws of the Egyptian pharaohs and of the Babylonian king Hammurabi a great deal of importance because not only were they written down, but they were written in a medium of permanence - stone (see Toynbee, 1988, chapter 35, Innis, 1972, Introduction) For the first time, marriage was recognized as legal when there was a legal document (Innis, 1972, p 33) The classrooms focused on teaching the students how to read and write, their primary purpose was to produce scribes (see page 55 for a discussion on the Sumerian classroom and page 100 for a discussion of the Egyptian classroom) The adult teachers also attempted to pass on to the children a reverence for the 'scribal culture' and the art of writing (Casson, 1975, p 54)

The same can be said for the Spartan and Athenian schools which followed those of Sumer and Egypt For example, Sparta was a military state and its struggle for military supremacy characterizes much of its 'culture' The culture of Sparta was

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[40]The use of the word culture in historical studies and the definitions of Bagby (1958) and Kroeber (1952) are discussed by Toynbee (Toynbee, 1988, p 43) Kroeber contends that culture embodies the values of a society and I agree

less intellectual but no less defining. The classroom in Sparta was designed to produce a fine physical specimen. There was a transmission of culture within the classrooms of Sparta as the adult teachers not only worked to produce a soldier, but a person who believed in the military objectives of the Spartan government as indicated by the recitation of heroic epics and poems that were designed to incite the youth to physical greatness (page 131). In Athens, the shift from a physical to an intellectual focus which had occurred within the Greek civilization was reflected in the curricula of Athenian schools which became more literary than that of the Spartans (page 144). The curricula of the schools examined in this study indicate that changes in the curricula reflected changes in the cultural focus of the societies, and although the curricula changed, the classroom and the methods used to transmit the culture did not change in any fundamental way.

THE MEANS BY WHICH CULTURE IS TRANSMITTED IN THE CLASSROOM

Teachers were given the responsibility for transmitting the culture of the society to the young, but despite developments in communications media available throughout history, the fundamental characteristic of schooling seems to have changed little: teachers interact with students and act as models for the students. There are two points to this observation.

Firstly, students have always interacted and communicated on a personal basis with their teachers. Even though changes in media would have made it possible for students and teachers to change the *manner* in which they interacted, this did not happen very much. Teachers and students continued to enter into discussions, and the importance of discussion was stressed by teachers from each of the three civilizations studied. Examples of this are given in the next section.

Secondly, teachers throughout history have interacted with students by providing for students an example of what they were attempting to teach them. Like the gorillas and the preliterate tribespeople, adults have attempted to pass along the culture of their societies by doing and showing, not just by telling. In Figure 5-1, a Greek schoolchild watches closely as his teacher writes on a tablet.

Figure 5-1
Teacher giving a writing lesson (Beck, 1975, plate 74)

These two aspects are related. According to Carl Rogers, in order to have meaning and importance, what is learned must affect that person's life or the person's potential to live life (Rogers, 1969). Such learning usually occurs through human interaction, because we derive meaning from our relationship with other humans (Rogers, 1969). This is based on the thesis, introduced by John Dewey (1938, 1966) that experiential learning produces significant behaviour change. A student may learn by doing a

project in solitude, but its significance is acquired only through interaction with other persons (Stanford and Roark, 1974, p. 4).

Culture is Transmitted by Teachers and Students Interacting

In *The Satire on the Trades* which I mentioned earlier (page 106), the student is encouraged to enter into a discussion on his studies: "When you come forth from school after midday recess has been announced to you, go into the courtyard and discuss the last part of your lesson book" (cited in Simpson, 1973, p. 335). The Egyptians recognized that the learning would be reinforced when it was discussed by the students among themselves and with their teachers. We are also told that the young Egyptian student was sometimes assigned a senior official as a mentor. The mentor stayed with the child and oversaw all instruction (Lichtheim, 1976, vol. II, p. 167).

The Papyrus Lansing in the British Museum compares a student to a obelisk of stone:

> Young fellow, how conceited you are! You do not listen when I speak. Your heart is denser than a great obelisk, a hundred cubits high, ten cubits thick. When it is finished and ready for loading, many work gangs draw it. It hears the words of men; it is loaded on a barge. Departing from Yebu it is conveyed, until it comes to rest on its place in Thebes.[41]
>
> So also a cow is bought this year, and it plows the following year. It learns to listen to the herdsman; it only lacks words. Horses brought from the field, they forget their mothers. Yoked they go up and down on all his majesty's errands. They become like those that bore them, that stand in the stable. They do their utmost for fear of a beating.
>
> But though I beat you with every kind of stick, you do not listen. If I knew another way of doing it, I would do it for you, that you might

[41]The finished stone obelisk fulfils its intended purpose, the student does not.

> listen. You are a person fit for writing, though you have not yet known a woman. Your heart discerns, your fingers are skilled, your mouth is apt for reciting.
>
> Writing is more enjoyable than enjoying a basket of [ ] and beans; more enjoyable than a mother's giving birth, when her heart knows no distaste. She is constant in nursing her son; her breast is in his mouth every day. Happy is the heart [of] him who writes; he is young each day (cited in Lichtheim, 1976, vol. II p. 168)

This passage stresses the importance of the student listening to the teacher. It is not enough that the student has fingers skilled at writing, the young fellow must also gain knowledge from the words of the teacher. The student is being told that it is not enough to be able to write, there is more to be gained from listening and interacting with his teacher.

The writings of ancient Eastern civilizations also mention the interaction of the teacher with the students. Although the Eastern civilizations were outside the scope of this study, the influences of their teachers may have been felt in the classrooms that were examined, especially after trade routes opened.

In the Indian epic *Mahabharata*, a poem, the Bhagavad-Gîtâ, represents a discourse between Arjuna, a young man and his superhuman hero, Krishna. Krishna appears to Arjuna in the guise of a charioteer and instructs Arjuna in how to attain Wisdom. Arjuna asks questions, and Krishna replies. It is a conversation in which Arjuna is a student, gaining information and insight through the questions and answers (Ulich, 1965, p. 5; Mayer, 1966, p. 51-63). The picture of a student conversing with his teacher is evident in the poem.

The writings of Confucius (c. 550 - 478 BCE) also stress the importance of dialogue between student and teacher. In this except from Book XVI - Hsio Ki, or Record on the Subject of Education, Confucius points out that learning must take

place in the company of friends, stressing not only the interaction between teacher and student but amongst students. It is important for the teacher to be a skilful questioner if the student is to be encouraged to talk with the teacher. Here is what Confucius says:

> 11. The rules aimed at in the Great college were the prevention of evil before it was manifested; the timeliness of instruction just when it was required; the suitability of the lessons in adaptation to the circumstances; and the good influence of example to parties observing one another. It was from these four things that the teaching was so effectual and flourishing.
>
> 12. Prohibition of evil after it has been manifested meets with opposition, and is not successful. Instruction given after the time for it is past is done with toil, and carried out with difficulty. The communication of lessons in an undiscriminating manner and without suitability produces injury and disorder, and fails in its object. Learning alone and without friends makes one feel solitary and uncultivated, with but little information . . .
>
> 18. The skilful questioner is like a workman addressing himself to deal with a hard tree. First he attacks the easy parts, and then the knotty. After a long time, the pupil and the master talk together, and the subject is explained. The unskilful questioner takes the opposite course. The master who skilfully waits to be questioned, may be compared to a bell when it is struck. Struck with a small hammer, it gives a small sound. Struck with a great one, it gives a great sound. But let it be struck leisurely and properly, and it gives out all the sound of which it is capable. He who is not skilful in replying to questions is the opposite of this. This all describes the method of making progress in learning.
>
> 19. He who gives only the learning supplied by his memory in conversations is not fit to be a master. Is it not necessary that he should hear the questions of his pupils? Yes, but not if they are not able to put questions, he should put the subjects before them.
>
> 20. The son of a good founder is sure to learn how to make a fur robe. The son of a good maker of bows is sure to learn how to make a sieve. Those who first yoke a young horse place it behind, with the carriage going on in front of it. The superior man who examines these cases can by them instruct himself in the method of learning. (cited in Ulich, 1965, p. 21-23)

In *The Analects*, Confucius presents the lesson in the form of questions and answers exemplifying the way in which interaction should be encouraged

> X The Master said, "At the great sacrifice, after the pouring out of the libation, I have no wish to look on "
> Some one asked the meaning of the great sacrifice The Master said, "I do not know He who knew its meaning would find it as easy to govern the empire as to look on this", - pointing to his palm (Confucius, *The Analects*, Chapter III)

Here we have another example of a lesson being presented as a dialogue between Master and those gathered around him

The very early literature of the Greeks does not provide a great deal of information about the classroom In the pages of Homer there is no detailed description of the schooling of the young Education of any type is mentioned only sporadically To the Homeric Greeks, education meant

> the deliberate moulding of character and physique by means of oral precepts and example As soon as the growing boy left his mother's care his character was developed by the experiences of daily life and moulded after the pattern of older men (Morgan, 1946, p 14)

As in other writings from the time of Morgan's writing, this passage seems rooted in a male perspective We would expect young girls to follow the example presented by their mothers and other older women The rôle of women in Homeric Greece and the question of their formal schooling remains unclear (see Arthur, 1981, p 19-38)

There is some indication from Chapter IX of the *Iliad* that the sons of nobles were placed under the care of experienced men who were trusted friends of the

family. There are no similar examples of the tutelage of girls. In this chapter it seems that the elders of the group have been charged with the welfare and instruction of boys. Nestor says to Tydeides,

> Son of Tydeus, in battle you are a man of great power, and in counsel too you are the best among all your age. Not one of Achaians will disparage what you have said, or speak against it: but you did not bring your argument to its conclusion. But of course you are young - you could be my own son, and the youngest born. . . . Give a feast for the elders; it is right for you to do this, and quite what is proper. Your nuts are full of wine that the Achaians' ships bring daily over the broad sea from Thrace; all hospitality rests with you. And when many are gathered together you will follow the man with the best plan. (Homer, *Iliad*, Book 9: 38-83)

Other sons of royalty are mentioned and the elders seem to take responsibility for providing counsel to them. The young men were included in the deliberations and discussions of the elders and in this manner would learn by example from these men who acted as mentors as well as tutors.

In a passage in the *Odyssey*, Telemachus tells those who are trying to plot against him that he will not sit down and eat with them as they have been robbing him for some time while "he was still too young to understand" (Homer, *Odyssey*, II, 314). He says that now "old enough to learn from others what has happened and to feel my own strength at last" (Homer, *Odyssey*, II, 314). This could mean that Telemachus feels he is ready to gain knowledge through instruction, by listening to others. However, Telemachus has just been visited by Athene, the goddess of defensive war and wisdom who warns him of his enemies and supports his plan for the journey to find his father, Odysseus. It seems likely that Telemachus is referring to the

knowledge he has received from Athene rather than any instruction delivered by earthly mentors

Xenephon, the son of a knightly family of Athens was a general, historian, philosopher and essayist He is generally believed to have been born about 429 BCE although some place his date of birth no later than 444 BCE (Xenephon, *Cyropaedia*, preface, p vii)

Xenophon gives an account of Cyrus, the prince of Persia in *Cyropaedia (The Education of Cyrus)* Xenephon used Persia as a model of his idealized state rather than basing his writings on historical facts An admirer of the state of Sparta and its constitution, the Persia of Xenephon's writings has many more similarities with Sparta than it does of the actual country of Persia (Xenephon, *Cyropaedia*, preface, viii - ix) The book describes the entire life and career of Cyrus not just his formal schooling, as the title implies

Xenephon describes Cyrus's schooling as focusing on making him dutiful, self-controlled and obedient to the officers He says, "The boys go to school and spend their time learning justice, and they say that they go there for this purpose, just as in our country they say that they go to school to learn to read and write" (Xenephon, *Cyropaedia*, I, ii, 6) Just as their superiors "spent the greater part of the day in deciding cases for them", the students were expected to charge their fellow students with any wrong-doings that they might discover These cases of "theft, robbery, assault, cheating, slander" along with charges of "moral wrongs" such as ingratitude and neglect of duty, were decided by the students Cyrus tells of a case that he was given to judge

> My teacher appointed me, on the ground that I was already thoroughly versed in justice, to decide cases for others also. And so, in one case, I once got a flogging for not deciding correctly. The case was like this: a big boy with a little tunic, finding a little boy with a big tunic on, took it off him and put his own tunic on him, while he himself put on the other's. So, when I tried the case, I decided that it was better for them both that each should keep the tunic that fitted him. And thereupon the master flogged me, saying that when I was a judge of a good fit, I should do as I had done; but when it was my duty to decide whose tunic it was, I had this question, he said, to consider - whose title was the rightful one; whether it was right that he who took it away by force should keep it, or that he who had made it for himself or had bought it should own it. And since, he said, what is unlawful is wrong, he bade the judge always render his verdict on the side of the law. (Xenephon, *Cyropaedia*, I, iii, 16-17)

Self-control and obedience of superiors were also important lessons. Xenephon says that the model of the elders at the school "living temperately day by day" and also obeying those who were their superiors, reinforced the lessons of the school. The youths "do not eat with their mothers but with their teachers, from the time the officers so direct. Furthermore, they bring from home bread for their food, cress for a relish, and for drinking, if any one is thirsty, a cup to draw water from the river" (Xenephon, *Cyropaedia*, I, ii, 6-8). The boys remained in this system of schooling "until they are sixteen or seventeen years of age, and after this they are promoted from the class of boys and enrolled among the young men" (Xenephon, *Cyropaedia*, I, ii, 8). Cyrus was an exception in that he left school at the age of twelve at which time he went to stay with his grandfather, although he later returned for a final year of schooling (Xenephon, *Cyropaedia*, I, v, 1). By the age of twelve, he had demonstrated that he was superior to "all the other boys of his age both in mastering his tasks quickly and in doing everything in a thorough and manly fashion" (Xenephon, *Cyropaedia*, I, iii, 1). As Cyrus himself says, he was especially adept "in throwing the

spear and in shooting with the bow" (Xenephon, *Cyropaedia*, I, iii, 15). Cyrus felt that he lacked skill in horsemanship, which he could best acquire from the men at his grandfather's court and so he stayed with his grandfather for about four years.

Xenephon describes Cyrus as "perhaps too talkative, partly on account of his education, because he had always been required by his teacher to render an account of what he was doing and to obtain an account from others whenever he was judge" (Xenephon, *Cyropaedia*, I, iv, 3). We know from this account that the youths learned their lessons by example; they lived with their teachers and as Xenephon says lessons such as self-restraint in drinking and eating are reinforced when they see that "their elders do not leave their posts to satisfy their hunger until the officers dismiss them (Xenephon, *Cyropaedia*, I, ii, 8). It is by example that the teachers show Cyrus the importance of discipline and temperance. The students lived with the teachers and were encouraged to discuss their lessons with them. They received feedback from their teachers when they did not perform as the teachers thought appropriate, as was the case when Cyrus decided the case incorrectly.

Zeno of Elea is known for propounding arguments to prove inconsistencies in concepts of multiplicity and divisibility which came to be known as Zeno's Paradoxes. The problems he presented employed the Pythagorean method of argument correctly to arrive at two mutually exclusive conclusions, thereby revealing the weakness of the Pythagorean tenets. Dialogue was an essential component of Zeno's methods: he asked questions, the answers to which were accepted as true. These answers served as starting points for further questions until, after a series of questions, the accepted truths were shown to be contradictory (Marrou, 1964, p. 51; Aaboe, 1964, p. 42).

Dialogue was the essential feature of the teaching method of Socrates as well. Characteristic of the method of Socrates was the need to have a companion in the pursuit of truth. Socrates had many devices for attracting people to join him in the search for truth; they were often unwilling companions who later discovered that "there is amusement in it" (Plato, *Apology*, 33). In the Protagoras, Socrates is represented as saying: "'If one alone perceive' - why he goes off at once looking for someone to whom he can show his idea and with whom he can confirm it, and will not rest till he finds him" (Plato, *Protagoras*, 348d).

Socrates used dialogue to prod the learner into remembering what he already knew. To illustrate this point, Socrates undertook to teach a slave boy the proof of the Pythagorean theorem in the *Meno* (Plato, *Meno*, 82a-86b). Whether or not the reader believes the boy had the answers to the geometry problem lying latent in his head, Socrates's teaching methods are impressive. He first of all determines how much the boy knows. He uses diagrams, drawing the geometric figures in the sand with a stick to provide the boy with a picture of the problem. He takes the boy step by step, question by question until it is clear that whatever the state of the boy's knowledge beforehand, he has accepted the proof as Socrates taught it.

Another teacher who recognized the importance of interaction with his students was Isocrates. Isocrates established close personal bonds with his students; he usually had only five to nine pupils at any one time (Marrou, 1964, p. 86). This bond continued throughout the life of both parties.

On the basis of such accounts as these, I argue that in the classrooms of ancient times, teachers passed down their knowledge through interaction with their students. The teacher was always in a position of control and that lesson was passed

down as part of the implicit message, as in Cyrus's case, schooling was focusing on making the child dutiful, self-controlled and obedient to those in powerful positions This message was transmitted through interaction and by the model presented by teachers

Culture is Transmitted When Teachers Provide a Model for Their Students

The teachers of the Sumerian and Egyptian classrooms were first of all scribes before they were teachers There was no separate profession of teacher Those who became teachers were expert in what they taught In the Sumerian classroom, the teachers who taught the children how to write were professional scribes This allowed the children to learn how a scribe behaved and what a scribe did by observing their teacher (see page 57) The scribe taught by doing as much as by showing the students what should be done The student could observe that the teacher was engaged in the work that was taught The teachers of the Sumerian school prepared the tablets that the children were given to copy (see pages 62, 68) In doing so, the Sumerian scribal teachers created much of the literature and solved many mathematical problems for the first time They created the knowledge as well as passed it on (see pages 55, 66)

The same is true for the teachers of the Egyptian civilization The teacher in the Egyptian classroom was a master of the subject area in which he taught For example, the teachers of the scribal art were scribes, while those in professional schools, like the medical school, were members of those professions (see page 119)

In Sparta, where the classroom was modelled after the military, the same was true. The students were housed in barracks and divided into companies over which a soldier was in charge (see page 136). Studies in such areas as gymnastics and boxing were part of the military regime and monitored by a hierarchically ordered group of teachers (see page 137). The teachers were soldiers and behaved and lived as soldiers.

During the early days of Athenian education, the teachers followed the same trend as previously found in Sumer, Egypt and Sparta. For example, during the period of Old Athenian society, teachers included people who were first of all recognized for their contributions to the body of knowledge. Thales and Pythagoras are examples of men who were known primarily for their contributions to philosophy and mathematics but who were also prominent teachers (Bowen, 1972, p. 63-66). Later, the Sophists went about lecturing and advertising for students. Those who were the most skilful at what they professed to teach - rhetoric and debating - attracted the most students and were the most successful teachers of the period (Marrou, 1964, p. 50). The skills needed to attract students were the same skills that they attempted to impart to the students as they prepared them to be the future statespeople and teachers of Athens.

It was not until the mature form of the Greek classroom developed that there was any deviation from this model. During this latter period, teachers began to be hired by a committee (see page 169). These teachers were hired primarily to teach, and their expertise in their subject areas was not a primary concern to those hiring. Ironically, it was perhaps the high esteem with which the Athenians regarded education that caused them to hire people primarily as teachers. It was during this

time that the status of being a teacher diminished, as did the wages and benefits paid to the teachers (see page 170). It may have been that teachers were respected and esteemed within society as long as they had a profession apart from teaching. Once their primary responsibility was teaching the children rather than practising their profession, whether that profession be as a scribe, a mathematician or a philosopher, teachers lost some of the respect they had once enjoyed in society (see page 170). It is not surprising that at the same time that teachers were suffering from a lower position within society, their salaries also dropped (see page 170). Today, many teachers in public schools are given responsibility to teach in subject areas in which they have no specific training or aptitude. At the same time, it would seem that teachers are not highly esteemed by the general public; during contract negotiations, for example, public sentiment is often not strongly supportive of teachers' demands. It is as if there were a strong dependent relationship between the position of teachers in society and teachers' professionalism as demonstrated by expertise in the subject area.

There were two facets to what the student learned from the model presented by the teacher. The first lesson was simply how to perform certain tasks, like writing and performing arithmetical calculations. The second lesson was an implicit: if the student persevered and followed in the footsteps of the teacher, he would be granted a similarly powerful position. Even when the position of the teacher within Athenian society was eroded, literacy was valued and was a prerequisite for admittance into an hierarchically ordered society (see pages 145, 148) as it also was earlier in Sumer (see page 48) and Egypt (see page 106).

THE STRUCTURE OF THE CLASSROOM AND THE METHODS USED IN THE CLASSROOM ARE DESIGNED TO PRESERVE THE TEACHER'S POSITION OF POWER AND CONTROL

Regardless of the position of the teacher in society in general, I suggest that in each of the civilizations studied it was of utmost importance to the teacher and society that the teacher maintain a position of control inside the classroom. In this section, I hope to show that the classroom was designed to impose control over the students, and the methods used inside the classroom were meant to emphasize the teacher's position of control over the young. Examples from Sumerian, Egyptian and Greek classrooms illustrate that the methods used by teachers in those classrooms were pedantic with the primary purpose of controlling the students. I expect that the similarity between classroom structure and methods, despite changes in technology, is explained by the tendency of those in powerful positions to resist any change that will undermine their control. I suggest that society has a vested interest in the classroom remaining the same: it is a matter of society's survival to teach the young the meaning of power, the importance of control and the hierarchy of the society. It will first of all be shown that the structure of the classroom has always emphasized the hierarchy of the teacher-student relationship and the structure itself imposed a level of control over the students.

The physical characteristics of the classroom did not change

I believe it is significant that the physical structure of the classroom is much the same today as it was five thousand years ago; the structure of the classroom reflects the hierarchy of the teacher-student relationship. In the classroom at Mari (see page 39), it seems the children sat on benches, row upon row, with between twenty-five and thirty-five students in a room together with their teacher. The benches were made of baked clay; the shorter benches would seat one or two children, while the longer ones might seat three or four. The benches faced the front of the room. There was no need for the children to have desks; they were able to hold their rigid clay tablets on their laps while they worked. A photograph (see Figure 2-2) of the site at Mari during excavations shows the workers sitting at the benches, looking very much like students. It was immediately upon discovering the room that they believed it to be an ancient classroom as it so closely resembled present day classrooms.

The physical layout of the classroom was studied by Attila Horvath (Horvath, 1984). In the 1960s Edward Hall compared the different spatial needs of Americans and Germans, as well as other ethnic groups. For example, in Germany, he says "it is a violation of the mores to change the position of your chair" (Hall, 1966, p. 137). This has led researchers to believe that classrooms should be constructed with the needs of different ethnic groups in mind and Horvath's findings supported this thesis[42]. One might expect that an historical look at the physical characteristics of classrooms would reveal profound variations in classroom design. In my opinion it does not.

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[42]Prussian schools, for example were built with windows to the left of the student to prevent shadows from the students' hands falling on the paper, obscuring what was being written (Horvath, 1984).

This is not to say that there have not been changes and variations, but for the most part, the structure of the classroom seems to have changed very little since its invention in Sumer[43]. This study has shown that sometimes classrooms were rooms within temples in Sumer (page 49) and Egypt (page 86), while the classroom in Sparta was a military barracks (page 136). In Athens, teaching sometimes took place in the agora, in private homes, in privately owned facilities or out of doors (see page 150) . Despite these differences, in every case it seems that students gathered around the teacher. In most cases the students sat facing the teacher who sat or stood in a position of prominence usually at the front of the gathering. This is shown in pictures preserved on Greek pottery (see chapter 4 and Beck, 1975).

I believe that it is not a coincidence that this structure of the classroom has persisted. Although other arrangements were experimented with throughout history, such as having the teacher sit at the same level as the students (see Figure 1-3), the structure quickly reverted to a structure like that of the Sumerian classroom (see page 9). This arrangement has the teacher standing in front of the students, who are often sitting. These two characteristics - standing and being in front - endow the teacher with power and control over the students. The message that this design imparts to the students is a message that each society has found necessary to pass on to its young - it is important to know one's place in society and to behave appropriately, especially when gathered together. I suggest that the classroom structure throughout

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[43]In some ways, it may seem as if schools have mirrored the type of processing that occurs in modern factories: students move from one classroom to another to be taught by teachers who specialize in different subjects. However, there seems to be less flexibility in the school than the modern factory; the school allows for few variations in the specifications for the final product, and whereas factories produce as many or as few products as the customer demands, schools are geared to process all young people.

history has been one means to teach the young that there is a dichotomy of power within society. Jackson (1968) recognizes that this is a message that the school attempts to pass on to the students; I suggest that it has always been the case, and the structure of the classroom augments the message that is also contained in the methods used within the classroom.

Strict discipline and pedantry were always used to control the students

I suggest that the methods used by adult teachers to transmit the culture to the young have always been designed to protect the teacher's position of power over the students. It seems that within the classrooms of each civilization there has been the temptation of those in powerful positions to control the young. From each of the histories, examples of control as demonstrated by strict discipline and pedantry are prevalent.

Stories of teachers and students in the early classrooms of Sumer and Egypt are permeated with examples of harsh punishments if the child did not obey the teacher. The essay discussed on page 74 gives an account of the child's day at school, where the child was caned by his headmaster and others, including those in charge of neatness, silence, good behaviour, the gate and the assembly. We also heard of the success of a student in convincing his father to invite the teacher to his house whereupon the teacher was given a seat of honour, the student poured fragrant oil on the teacher's stomach and back and the father contributed some extra money to the teacher's salary in the hopes that his son would be less harshly treated by the teacher (see page 75).

Discipline was also strict in the Egyptian school as discussed on pages 120 to 121 and characterized by the slogan that has been called the "foundation of all teaching in the Egyptian school" (Erman, 1971, p 330) "The youth has a back, he attends when it is beaten" (see page 120) The literature of Egypt tells a similar tale of strict discipline and corporal punishment (Montet, 1958, p 256, Erman, 1971, p 330, see pages 120 to 121) These writings were designed to be copied by the schoolchildren as part of their lessons In this way, students were controlled not only by physical discipline but by the promise of beatings contained in the writings they were given to copy

The Spartan school child was subjected to strict physical control, and as might be expected in a system designed to produce a soldier, discipline was harsh (page 136) The children were divided into squads and troops, over which older students were placed in charge of control The hierarchy of power was demonstrated in the passage given by Plutarch (see page 136) where the older men punished the boy who was in charge, who in turn inflicted strict discipline on his younger charges. Children attending the mature form of the Greek classroom were also subjected to physical punishment, including strapping and being hit (page 174)

It seems as if strict discipline was a means by which the teachers in each society controlled their young students It was used to demonstrate the teacher's position of power, and in many cases seems to have been used to demonstrate the levels of control (appointing others to be in charge of certain aspects of behaviour (page 74) and grouping children together in squads to be disciplined by older students (page 136)) The messages contained in those writings the children were given to copy also warned of the consequences of inappropriate behaviour, reinforcing the

message of the importance of control and the consequences of not being a good member of the society.

I suggest that pedantry along with discipline in the classroom has been used to accentuate the teacher's superior position over the student[44]. Examples from the classroom histories of Sumer, Egypt and Greece indicate that pedantry has always been a consistent and pervasive characteristic of the interactions between teacher and student.

Textbooks used throughout history are replete with examples of pedantry. It should first of all be noted that although most studies of school text books begin with the mass production of these books after the development of movable type and the printing press[45], this study has shown that the forerunners of the textbook existed as far back as the first classrooms of Sumer (see page 52).

The children of Sumer and Egypt used texts containing word lists, often arranged by category, such as lists of birds' names or types of meat (see pages

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[44]It is accepted that the idea by which to test pedantry is "fitness - and fitness not only as regards time and place, but also as regards degree, quality, amount, or kind" (Barzun, 1959, p. 218). Although the shift in time and place from the Sumerians to the Greeks to present Western civilization is vast, and makes fitness of method for ancient classrooms difficult to measure, the examples given in this section appear to be inappropriate without question when it comes to evaluating degree, quality, amount and kind. The fact that examples of the same types of pedantry exist in present day teaching methods supports the idea that these are examples of pedantry that transcend the time period in which they are found in this history.

[45] There is a vast amount written on textbooks and the effects of the printed word. Elizabeth Eisenstein provides a comprehensive review in her book *The Printing Press as an Agent of Change* (1979). Marshall McLuhan's *The Gutenberg Galaxy* (1962) studies the effects of the printed word on society and how people think. General studies include Svend Dahl's *History of the Book* (1968) and *Medieval Readers and Writers 1350-1400* by Janet Coleman (1981). George Putnam's *Books and Their Makers During the Middle Ages* (1962) includes a discussion on the effects of books on education. Johannes Amos Comenius produced the first illustrated textbook for young students, *Orbis Sensualium Pictus*.

55, 99) Many present-day primary grade readers include lists of words with which the child is expected to become familiar in the same manner as was the Sumerian schoolchild The words on the lists studied by the Sumerian child were sometimes arranged by category, such as birds or animals, but were often grouped together for no other reason than they started with the same letter or syllable (page 44) There seems to have been no consistency in the manner in which the material was presented, and no consideration given to whether it was easier for the child to learn words if they were grouped according to sound, letter, or category

Greek school children, after learning the letters of the alphabet, created lists of syllables by combining the letters in every possible way (see page 161) There was an emphasis put on the details of this process, I suggest that the slavish attention to these details constituted a means by which the children were kept busy and under control, and these were the primary concerns of the teachers rather than a concern with the appropriateness of method This is further demonstrated by the rules which were given to Greek school children learning to write short stories No deviation from the prescribed format was allowed· every story was to have eight paragraphs, each with a fixed theme (see page 159)[46]

These early texts also contained rhymes (page 66) like those recited as memory aids by schoolchildren today They also contained proverbs which the children copied, many of which glorified the position of scribe such as the following

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[46]The issue was addressed in an essay by William Hazlitt in the early nineteenth century (Hazlitt, 1982 rpt) who criticized his teachers for their pedantry demonstrated in methods such as forcing students to memorize without understanding the works. In the same way, Greek children were expected to memorize passages and read aloud with no analysis of the ideas In 1978, Lloyd-Jones criticized the pedantic methods of teaching English and called for a balance between such things as "elitist works and popular culture" (Lloyd-Jones, 1978)

from Sumerian tablets: "A scribe whose hand moves in accordance with the mouth, he is indeed a scribe!" (Gordon, 1968, p. 202). Egyptian writings include:

> If you understand writings, then it will be better for you than the professions which I have set out before you . . . .. A day at school is advantageous to you. Seek out its work early . . . .. See there is no scribe lacking sustenance. (Simpson, 1973, p. 335 - 336)

This propagandizing of the profession of the instructor is certainly evident in some of what children are given to read today: the stereotype of the kindly, enthusiastic, self-sacrificing teacher permeates adult literature and movies[47]. Despite such propaganda, it has been found that the picture of the teacher as a pendant is a recurring theme in literature (Davis, 1987; Nissman, 1973). A less than flattering picture of the teacher may be reinforced by an opposite point of view, which is also portrayed in the mass media: the success of Pink Floyd's music *The Wall* and the adolescent following of the movie *Pump Up the Volume* are examples of the popularity of the portrayal of teachers as people with whom meaningful interaction is unlikely, and the classroom as being an unlikely site for positive student-teacher interaction.

Pedantry was also evident in the methods used to teach arithmetic in the Sumerian, Egyptian and Greek classrooms. Within the Sumerian schools, learning the number system was made complicated by the use of both a sexagesimal and a decimal system, as described on pages 58 to 62. The Sumerians were unique in their use of a combination of numbering systems (Dantzig, 1954, p. 10-22), and perhaps

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[47]Recent movies such as *Dead Poets Society* and *Stand and Deliver* offer the same stereotypical image of the teacher as did earlier movies like *To Sir With Love*, based on a book by E.R. Braithwaite. An earlier book with the same theme which was made into a film was *Goodbye, Mr. Chips* by John Hilton.

resisted the ultimate shift to a decimal system. The cumbersomeness of the sexagesimal system is illustrated by the problem given to students discussed on page 65, which although presenting an elegant calculation of the square root of two, would seem to be complicated by the use of what Dantzig suggests is a uncommon and complex numbering scheme (Dantzig, 1954, p. 10). Schoolchildren prepared multiplication tables in what must have a tedious fashion; tablets containing the multiplication tables for numbers as large as forty-five were commonly prepared by the students (see page 62). Tablets containing these multiplication tables were found in classrooms and contained the writings of teacher and student (page 61). This suggests that they may have been primarily for classroom use rather than administrative purposes. Their primary purpose may have been to keep the student occupied. Errors by the teacher were common (page 62); this also supports the idea that these large tables were created to keep the student busy and under control rather than being used in any practical applications.

The present day use of cumbersome and inappropriate systems is discussed by John M. Culkin (1981). Like others including Mark Twain and George Bernard Shaw, Culkin points to the problems with the English alphabet which uses twenty-six letters which are "at once too few and too many to handle the roughly 40 pieces of sound (phonemes) that constitute today's spoken English" (Culkin, 1981, p. 90). The use of an alphabet where one letter represents one sound would ease the difficulty of learning to write in English and eliminate the need for such classroom methods as the "spelling bee" (Culkin, 1981, p. 91). He points out that although there have been new alphabets devised, none of them has been adopted because of the cultural resistance to change (Culkin, 1981, p. 90).

The Egyptian system of writing was also made cumbersome because of the symbols used, the hieroglyphs were particularly difficult to learn Even after hieroglyphs were replaced by simplified hieratic and demotic scripts (see page 103) and were no longer in common use, the study of hieroglyphs continued in the classroom Eventually, only those entering the priesthood were required to study them (see page 104), but for some time learning the complicated script constituted much of the curriculum (see page 103) and would have occupied the young schoolchild

The writing medium used by the Egyptian schoolchild added an additional degree of unnecessary complexity Although papyrus became plentiful, its use was reserved for the upper level student The young child continued to use pottery pieces, wooden boards and limestone slabs - materials that were more awkward to write upon and transport than papyrus (see page 90) The supply of papyrus was kept artificially low by the pharaoh who by law was assured a monopoly on its production (see page 90) This kept prices high and papyrus continued to be too expensive to provide to all students Even within Greek society when papyrus was abundant, the use of papyrus was reserved for the use of advanced students (see page 152 to 155) The use of a cumbersome writing medium also kept the children occupied with learning to write for longer than may have been necessary if papyrus had been used Reserving papyrus for upper level students and teachers also impressed upon the young students the hierarchy of learning and the improved position and its privileges that were to be gained through this progression

An aspect of teaching methodology that has remained very much the same is the method of copying used by the students The Sumerian children copied lines or words given to them by their teacher They worked out arithmetic problems and

copied mathematical tables that had been prepared. The children of Egypt followed this model, as did the children of Greece who spent a great deal of time writing out letters and syllables before moving on to words and sentences. Today, notebooks belonging to primary aged schoolchildren are also filled with pages of the letters of the alphabet, a perfect model prepared by the publisher in the upper corner, and the child's imitations filling the page. In the same way, arithmetic books contain variations of the multiplication tables that were prepared by the Sumerian schoolchild five thousand years ago. The children are kept busy and under control. The message that this work is worthwhile is reinforced by the teacher correcting the student's work or punishing the student if it was unsatisfactory. Children were punished if their tablets were messy (see page 75) and corrections are found on their written work. One tablet shows the correction of a symbol, which although correct was not written well enough to satisfy the teacher (see Figure 3-4).

It seems that pedantry has been used in each of the classrooms to control students and to make them powerless by emphasizing the minute details of the lessons that are being taught. In this way, the business of the classroom is similar to the business of prisons: the control of those inside the institution is of primary importance. For the prison, this is the overt purpose. For the classroom, this is the informal or the implicit purpose.

Since the tenth century, prisons have become the primary means that society uses to control the actions of those who cannot control themselves or behave in an anti-social manner. Before that time, imprisonment was a temporary state (page 8). The prison has evolved from being one of several means of social control to being the

primary means and is now used for a range of controlling functions: prisons are used as holding facilities, centres for rehabilitation as well as a means of punishment.

Technology has provided alternate means of limiting people's freedom of action, rehabilitation and punishment, yet prisons, which may be the most restrictive and controlling of the alternatives, dominate. I suggest that it is the preoccupation of those with power to control the less powerful that makes a prison. I suggest that it is this concentration on control that keeps the prison from changing into a form which would probably not be recognizable as a prison. This may also have been the case with the classroom.

In the classroom there seems to have been a resistance to any changes that would lessen the control of those in power. According to Cornbleth, schools are instruments of social control used to foster conformity and national ideals and social conventions (Cornbleth, 1984, p. 30). Maintaining control and power seems to have been part of the implicit curriculum of each classroom since that of Sumer. It may be that each society, starting with the Sumerian, assigned to the classroom the task of introducing to the young members of that society the notion of social control.

What was included in the formal curriculum of the schools may have changed in the classrooms of Sumer, Egypt and Greece[48], but this was relatively

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[48]For instance, it might be argued that a change from the use of clay tablets to papyrus precipitated a shift to a more extensive focus on literature within the curriculum. When clay tablets were used in Sumerian classrooms, most of the literature that existed and that was taught in the classroom, was in the form of proverbs (which described the proper character of a scribe) and dialogues (which compared the virtues of two related things, like animals or professions as discussed on page 67). The Epic of Gilgamesh is the only surviving composition of substantial length with complexity of characters and plot. By the time of the Greeks, when papyrus was more common, there was a much greater body of literature which was used in the classroom, such as the works of Homer and Hesiod

inconsequential compared to what was included in the informal, the implicit, or the "hidden" curriculum. It is what was included in the hidden curriculum that affected the students and society as a whole. As defined by Martin (1976), a hidden curriculum "consists of those learning states of a setting which are either unintended or intended but not openly acknowledged to the learners in the setting unless the learners are aware of them" (Martin, 1976, p. 144). Throughout history there has been a hidden curriculum in the schools, and it has been at least as strong a determinant of the type of graduate produced by the school as has the formal curriculum. I argue that the hidden curriculum has not changed: it has always been to control the students.

The concept of a hidden curriculum has been frequently discussed in the literature since the late 1960's (Kohlberg, 1970; Vallance, 1973/74; Martin, 1976; Apple and King, 1977; Apple, 1982, 1991; Apple and Weis, 1983; McCutcheon, 1981; Gordon, 1983; Giroux and Purpel, 1983; Barrow, 1984; Cornbleth, 1984; King, 1986). There is no consensus as to the origin of the term although Edgar Freidenberg's observations on the idea in his 1963 book, *Coming of Age in America: Growth and Acquiescence* (Kohlberg, 1970, p. 63) are thought to be among the first. It has also been reported that Freidenberg used the term at a conference in the late 60's (Portelli, 1993, p. 344). However, Phillip Jackson (1968) is most often credited with the first use of the term in his book *Life in Classrooms* (Kohlberg, 1970, p. 61). In a recent paper, Portelli provides a good discussion of the history and usage of the term (Portelli, 1993, p. 343-344). Although it is suggested that the idea of a hidden curriculum "has a recorded history since the time of Plato" (Barrow, 1976, p.137), this may need to be rethought in light of the classroom evidence from the Sumerian and Egyptian civilizations.

Apple and Weis (1983) say that schools are important agencies of legitimation within society as they are "part of a complex structure through which social groups are given legitimacy and through which social and cultural ideologies are built, recreated and maintained" (Apple and Weis, 1983, p. 5). In this same way, the Sumerian and Egyptian schools contributed to creating and maintaining different classes with their societies. The scribal class seems to have been distinct because of its literacy, its ability to earn money without engaging in manual labour and its power to control the dissemination of knowledge. With regards to this last point, before people were taught to read, only the priests understood writings on religious documents and recipes for special medicines. Once literacy became more widespread, the priests, perhaps sensing the danger of losing their monopoly on the knowledge and the power associated with being the keepers of the knowledge, started a system of categorizing knowledge and each category was taught differently. The most important secrets were only transmitted orally, a second class was allowed to be written but only cryptically, mixing Sumerian and Akkadian forms of the language and could be transmitted to advanced students whereas a third category was a part of "general scribal training" (Bowen, 1972, p. 11-12). One of the "legitimation" functions of present day schools is to make students accept our socioeconomic system and the class structure within society (Apple and Weis, 1983, p. 6; Giroux and Penna, 1983, p. 106-107) and one way that this is accomplished is by controlling what knowledge is transmitted (Apple and King, 1977, p. 84). This occurred as early as Sumerian times.

As well as the school reproducing the existing and politically desired social structure (Apple, 1982), Gordon has said that "the school can be regarded as the first

important institution in which people learn about rules which are, objectively speaking, impersonal ones" (Gordon, 1983, p. 207). School policies and routines are a source of the hidden curriculum (Cornbleth, 1984, p. 30). They existed in ancient classrooms. As discussed above, discipline within these ancient schools was strict and harsh (see page 204). The students learned to be punctual, to obey the teacher, to follow instructions, and to perform routine tasks (see page 74).

McCutcheon (1981) observed that training children to be punctual, to do their own work, and to be obedient and subservient were important functions of the school (McCutcheon, 1981, p. 6). Apple and King stated that learning to follow classroom routine is one of the first lessons a child learns in kindergarten (Apple and King, 1977, p. 90). Jackson (1968) used the term hidden curriculum to mean expectations of behaviour. He said that children in elementary schools first of all learn to function in crowds; their daily schedule is ritualistic and cyclical and activities are performed to "rather well-defined rules which the students are expected to understand and obey" (Jackson, 1968, p. 8). Secondly, the children must adapt to being constantly evaluated, and thirdly, children must learn how to deal with the fact that there is a division between the weak (the students) and the powerful (the teacher) (Jackson, 1968, p. 10-28). The day-to-day regularities of school life contribute to the child's adoption of the society's idealogy (Apple, 1975, p. 210-11). The strictness of ancient schools was a part of their training of the students to adapt to a productive work life, just as schools today are training children to adopt habits of working during certain hours, listening to their boss, coping with co-workers and workplace evaluation. One ancient Sumerian schoolchild discovered one way of coping with the power of the

teacher - he bribed him, hoping he would be favoured with fewer beatings (see page 75).

It seems that in today's schools there are different messages being sent to children of different economic or social classes. A study by Jean Anyon (1980) looked at classrooms in what she called working-class, middle-class, affluent professional and executive elite schools. She found evidence that supported the research of Bowles and Gintis (1976) who said that schools made available "different types of educational experiences and curriculum knowledge to students in different social classes" (Anyon, 1980, p, 67). For example, she found that students in the executive elite school were allowed more freedom, such as movement in the hall, discussion, and independent research, whereas the children in one working-class school were told to "shut-up", ordered into their seats, required written permission slips with time and date to leave the room, and made to do tasks over and over for "practice" with no explanation from the teacher (Anyon, 1980, p. 71-89). She concluded that "the hidden curriculum of schoolwork is tacit preparation for relating to the process of production in a particular way" (Anyon, p. 90). Within the Spartan classroom, the *eiren* would have learned how to use power over the younger children, but obey the older men who acted as his supervisors. The *eiren* was chosen by the elders, and although we are told that the *eiren* was chosen on the basis of courage and judgment, it would not be surprising to see cases of nepotism, maintaining a class structure within a system that was already selective in admittance procedures.

Textbooks are a source of what is contained in the hidden curriculum (Martin, 1976, p. 141; Apple, 1991; Cornbleth, 1984, p. 30). In ancient Sumer and Egypt, the student was given proverbs and short pieces of literature that advocated the position

of a scribe to copy. During the Greek civilization, the student was exposed the taies of Homer and Hesiod, but mainly Homer. In all cases, what they were given to copy served as a form of propaganda either espousing the position of the scribe (as in Sumer and Egypt) or the heroic deeds of heroes (in Greek literature). The children may not have been aware of the effects of the propaganda, other than its rôle in teaching them to write. Although the overt curriculum was to teach the children to write, the hidden curriculum was to maintain within society the respected position of the scribe (in the case of Sumer and Egypt) or the literate member of the upper class (in Greece)[49].

In summary, the formal curriculum of ancient schools is not what was most important. The hidden curriculum contained the lessons necessary to maintain the structure of those civilizations. The students of Sumer, Egypt and Greece were taught to fit into society by the message that the schools were conveying through the hidden curriculum. They learned the value of their societal structures and many proceeded to reproduce the message by becoming scribes and teachers[50]. I suggest that not

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[49] Anyon (1983) found that history textbooks in the United States "serve the interests of some groups in society over others;" immigrants, blacks and women are especially under-represented (Anyon, 1983, p. 37). Women were also found to be under-represented in science books, according to two studies (Heikkinen, 1973; Bazler, 1990). Within these earlier civilizations, the same would be true: it was mainly the upper class children who would be exposed to the material in textbooks. After being subjected to strict control within the classroom, the promise of a position which would avail to them power and prestige must have been attractive.

[50]Because the students were for the most part from the upper class and may be presumed to have held certain beliefs in common because of their similar background, questions of resistance to the culture that was being transmitted in the schools may not have been an issue. In today's schools, there have been accounts of resistance by the students to the dominant culture and ideology that is being transmitted. Paul Willis, in his 1977 book *Learning to Labour* tells of a group of British working-class school "lads" who resisted the social message of the school by rejecting mental labour in favour of more "masculine" manual labour, in the model provided by their fathers

only has there always been a hidden curriculum within schools, but that the hidden curriculum has always been the same, to control the students, and that this has been achieved by discipline and pedantry. The classroom has not changed in any important respect because there has been a resistance to incorporate any changes, technological or otherwise, that would undermine the power of the teacher. If the classroom changed in such a way that it did not incorporate the notion of control, it may be that it would no longer be recognizable as a classroom. In that case it would have to be called something other than a classroom, as this aspect of control seems to have been as much a characteristic of the classroom throughout history as it has been characteristic of the prison.

COUNTER-ARGUMENTS AND REBUTTALS

It might be argued that the evidence presented in the previous chapters supports alternate interpretations from those I have suggested. I have presented what I hope is an accurate picture of the classroom from the time of the Sumerians to the Greeks. However, my interpretation, despite the confidence I have in it, is but one, and others looking at the picture may be expected to see things differently. Let me now attempt to present five possible arguments against my interpretation of the evidence, and my responses to those counter-arguments.

(Willis, 1977).

Counter-Argument 1: Classrooms have changed because the media of instruction changed.

It might be said that the classrooms have changed in that they have incorporated the use of different media as time passed, the Sumerians used clay tablets, the Egyptians and Greeks used wooden tablets, pottery fragments and papyrus Does this variation in the medium used not represent a change in the classroom?

If it is agreed that the medium used by the students and teachers changed, and I agree with this observation, how can it be said that what went on inside the classroom did not change? If nothing else, the medium used changed

Rebuttal of Counter-Argument 1: The real medium was the personal interaction between the teacher and the student.

However, I would argue, the medium of *instruction* did not change Although the earliest students in Sumer wrote on clay tablets and the Greek students three thousand years later wrote on papyrus, the medium of instruction was communication with the teacher, independent from the tools of writing Confucius provided us with an insight into the rôle that media play in teaching when he said in the *Analects* (page 191)

> VIII 1 Tsze-hea asked, saying, "What is the meaning of the passage -'The pretty dimples of her artful smile! The well defined black and white of her eye! The plain ground for the colours'?"
> 2 The Master said, "The business of laying on the colours follows the preparation of the plain ground "
>
> (Confucius, *The Analects*, Chapter III)

In drawing a parallel between teaching and creating a picture, Confucius said that media are only a ground for a foundation of layers. In painting, the black and white drawing is created before the colours are added. In teaching, student-teacher interaction is the foundation over which layers of instruction are added. I suggest that the layers include the discipline required of the student to master the skill of writing; in each of the civilizations examined, the ability to read and write was achieved only after an arduous journey of hard work (pages 80, 119, 162). Once the fundamental skills were achieved, other layers could be added - exposure to writings, training in arithmetic, until eventually the required number of layers were added and the child was considered a final product and allowed to become a scribe (pages 80, 101). The media of writing changed, but independent of the media, the process of learning is one of communication between student and teacher. The medium only provided the ground for disciplinary training. As described earlier, the medium sometimes contributed to the control exerted by the teacher over the student (see page 209).

Counter-Argument 2: Classrooms have changed because new media affected who was taught.

Given that the media used inside the classroom changed, it might be argued that the shift in medium affected who would become a student and for how long he or she would remain in school. The Sumerian child attended school until maturity, but there was no school for advanced studies. However, the student in Hellenistic Greece was expected to stay in school until the age of eighteen at which time an Athenian male would be given the legal status of *ephebos* (Bowen, 1972, p. 84-85). When the institution of the *ephebeia* was first established in the fourth century BCE it provided

mainly military and physical training, but it later lost much of its martial character (Bowen, 1972, p. 84). After two years of ephebic training, schools of higher learning were available for studying rhetoric or philosophy and this study could continue for an indeterminate number of years "according to the will and wealth of the individual" (Bowen, 1972, p. 152). So, it might be asked, did not the change in medium affect who became a student?

Rebuttal of Counter-Argument 2: It does not matter if new media affect students so long as schooling is seen to take place, and is perpetuated.

I would suggest that what is learned has never been important to the maintenance of the structure of a society, only that something be learned, that teachers be seen to teach it, and that students be seen to believe it and be trained to teach it themselves, whatever their age. The hidden curriculum of the schools has not changed -it has always been to control the students and to teach them about power and position within society (see page 216). It is important to society then that there be an audience to hear this message and to pass it on to the next generation.

During the civilizations of Sumer, Egypt and Greece, only a small percentage of the children attended school. The admittance policy of these schools was based on heredity (class or position within the society) or ability to pay. There was no need for a formal statement of admittance; social circumstances kept the number of students low. Today, schooling in Western cultures is generally universal and often compulsory until a child reaches a certain age, such as age sixteen in Canada. At first glance, this might appear to be a shift in educational policy, perhaps attributable to changes in media. However, Ranson (1992) suggests that this only represents a shift from a policy of educating a few children to the present situation where the

school fails many of its students. "Only a few succeed because that is what our society has preferred," says Ranson (Ranson, 1992, p. 689) in what he calls the "institutionalizing of underachievement." He is referring to the British schooling system, and in particular the high drop-out rate, but the same might be said for the schools in North America. The failure of schools is manifested in ways other than dropping-out, such as a failure to address the problems of inner-city children, and those from culturally diverse backgrounds for whom the school curriculum, methods and procedures are often irrelevant (see Kohl, 1967; McLaren, 1980).

The number of years the child spent in school seems to have had little to do with the shift in medium or changes in the formal curriculum; there must be other societal factors affecting the number of years spent in school, or every subsequent addition to the curriculum would have required an additional number of years tagged on. In fact, the Sumerian system of writing was probably the most difficult to master and clay tablets the most cumbersome of media, so it might be expected that the Sumerian child would have required more years in school. I suggest the increase in the number of years spent in school during Spartan times was a response to the need to maintain control over the young men until they were old enough to be soldiers. This is supported by the continuation of the *ephebeia* in Athens; they continued to provide military training although they relied on professional soldiers for military manoeuvres (Bowen, 1972, p. 158).

Because controlling the young was something the classroom was suited to accomplish, it was adopted for use in societies wishing to provide mass schooling for the young. The adoption of the classroom as the primary instrument of mass education in Western civilizations would seem to support this argument. Before the

establishment of mass schooling, the classroom co-existed with other means of schooling for the young. Story-telling, the establishment of taboos and apprenticeship are examples of alternate forms of schooling that co-existed with the classroom to a greater extent before the classroom drove out competing methods and became the dominant means to deliver schooling to the masses. Apprenticeship and service, which provided an immediate and direct induction into the "secrets of the trade" (Schnell, 1979, p. 10) may have satisfied the demands for relevance, participatory education, and behavioural objectives and outcomes of those searching for alternatives to the traditional classroom in the 1960s and 1970s such as Illich (1971) and Freire (1971). Yet, the classroom has prevailed over alternate forms.

Alternatives to the classroom have been provided by each development in communications technology. It seems that technological changes had the propensity to emancipate the learning experience from the classroom; paper made correspondence courses available, people were able to own their own copies of books, and it would have been possible for the classroom to have been superseded. Computers and long distance communications technology have the potential to liberate the educational process from the classroom. Yet, this study shows that the opposite has occurred. It seems that instead of having a liberating effect, the educational environment has become more restrictive, and the mechanism which exerts the most control, the classroom, has become the principal means of providing schooling. The change in media or formal curriculum did not affect the length of time children spent in school; I suggest it was the desire to extend the control characteristic of the hidden curriculum that led to the adoption of the classroom as the mechanism for schooling all children and youths

Counter-Argument 3: Classrooms change because particular media facilitate the transmission of particular kinds of ideas.

Again, as in the case of the previous two arguments, it is accepted that there was change in the medium of communication from clay tablets in Sumer to the use of papyrus in Greece. Given this, are the types of ideas that a person might impart on a clay tablet different from those that she might impart if papyrus was used? If this is true, and Innis would say it is, it might be argued that the evidence presented here is seriously skewed. I have based my findings on the documents left behind from ancient civilizations - documents on clay tablets, inscriptions on stone, writings on wooden tablets and papyrus. If they contain a distorted depiction of these civilizations, the picture of the ancient classroom I have presented may be inaccurate.

Innis says "a medium of communication has an important influence on the dissemination of knowledge over space and over time" (Innis, 1951, p. 33; see page 178 for a discussion on Innis's ideas on this point). He adds that people wrote things on stone that they intended to be permanent. For example, when the Egyptians chiselled hieroglyphs on stone monuments "they were very carefully formed and decorative in character" (Innis, 1972, p. 16). These stone inscriptions were often meant to glorify a god or a pharaoh, and were considered a "basis of prestige" (Innis, 1972, p. 15). When writing shifted to papyrus, religious writings were replaced with secular literature (Innis, 1972, p. 17). If permanent media are used to impart ideas of a different kind from ephemeral media, the evidence presented here is distorted. In addition, "writing on clay and on stone has been preserved more effectively than that on papyrus" (Innis, 1972, p. 33). We have access to a great number of clay

tablets and ostraca, but we cannot tell the number of papyrus rolls that perished. Has this biased the analysis?

Rebuttal of Counter-Argument 3: No one can predict which media are truly lasting.

I would argue no; the schoolchild would have used non-permanent media for preliminary work and would have only transferred it to a permanent medium when it was perfected, as described on pages 89 and 152. Therefore, if school work has been destroyed over time, it would have been preliminary drafts. I am confident that the evidence presented on stone, clay and papyrus is balanced because, as I have argued, people of the time were often wrong about which materials were in fact to last. The young Greek schoolchild used pottery fragments as one medium for writing practice and it was only after a great deal of practice that he or she was allowed to write on papyrus (see page 152). Yet, the pottery has survived and the papyrus destroyed by the ravages of time. So, it seems that we have some permanent work and some impermanent work as evidence, providing an accurate picture of the ancient classroom.

Counter-Argument 4: The type of interaction that occurs within classrooms has changed with the introduction of mass education.

I have said, and will repeat it here as a basis for this fourth argument, that despite developments in media, the fundamental characteristic of schooling has remained the same: teachers transmit the culture of the society by interacting with students in a hierarchical manner, concentrate on their own pedantics, and use pedantry and discipline to control the students.

If the interaction between students and teachers is different it may be expected that the effects of that interaction in exerting control over the students has changed.

Rebuttal of Counter-Argument 4: Mass education has not changed the number of students for whom a single teacher is responsible.

Accounts of classroom life such as those given by Herbert Kohl (1967) and Peter McLaren (1989), give a picture of classroom life where any initiative by the teacher to communicate meaningfully with students is in conflict with the schooling system, and regarded with suspicion by other teachers, the administration and the students themselves (McLaren, 1989; Kohl, 1967). McLaren tells of his year as a grade five and six teacher at an inner-city school in Toronto and says "I began to be effective with these students when I dignified their own experiences as worthy of inquiry" (McLaren, 1989, p. 53). His attempts to communicate meaningfully with the students were met with hostility from other teachers during a staff meeting (McLaren, 1989, p. 122). He left teaching to return to university. It seems as if this type of personal communication between teacher and student conflicts with the message of a power hierarchy that the classroom is meant to impart. It may be that the interaction attempted by McLaren was lacking in the pedantry that other teachers used to control their classes.

Kohl relates his year with 36 children in a grade six class in Harlem, New York. He eventually came to know the children and related to their individual interests and problems and seemed to be successful in sparking their interest in learning (Kohl, 1967). This was accomplished in spite of an uncooperative system (no suitable books or supplies) and the suspicions of the students (Kohl, 1967, p. 53). However, the children in his Harlem school were less suspicious of his "experimental curriculum",

the basis of which was communication with them, than were students from a middle-class school who thought the pictures of a cathedral, shown during a class which deviated from the lesson plan, were "very beautiful" but wondered how this lesson was going to help them get into college (Kohl, 1967, p. 53). Kohl believes that despite obstacles, the "teacher must be an observer of his class as well as a member of it" (Kohl, 1967, p. 12). The suspicion of the teachers and the middle-class students is not surprising given the model of the classroom as a control mechanism which they would have become familiar; the reasons why the children from Harlem were less suspicious is worthy of examination.

These stories suggest that any attempt to change the hierarchy of interaction is met with resistance. Student-teacher interactions that conform to a hierarchical form would be considered positive by those involved, while new structures of interaction would be met with trepidation.

In addition, the student-teacher ratio is about the same as in the ancient classrooms and so the level of interaction is bound to be similar. It should also be noted that the age of beginning school has remained fairly constant at about six. Today, children start school between the age of five and six in most Western countries. Although some countries have less accurate birth records than others, children seem to start school at about the same age in many parts of the world. Children in Ghana, for example, are allowed to attend school when they can reach one arm up over their head and touch their opposite ear. Most children can accomplish this when they are about six years old.

Widely discussed in the literature is the effect on student-teacher ratio on student achievement (Smith and Glass, 1979; Glass and Smith, 1978; Gajewsky,

1973; Ryan and Greenfield, 1975), program effectiveness (Davidoff, 1990), and development of teaching methods (Klein, 1985). Smith and Glass (1979) say that student achievement is enhanced greatly if the size of a class is less than twenty students, and enhanced somewhat if the size of a class is reduced from thirty to twenty students (see also Glass and Smith, 1978; Davidoff, 1989). Others interpret the results of such research as inconclusive (NESDEC, 1975; Educational Research Service. 1980; Educational Research Service, 1978) while others dispute the findings outright, saying that there is no improvement in student achievement when class size is reduced (Harder, 1990) or that the effects are very small (Slavin, 1990).

A partial explanation for the disagreement in the research might be that any differences in student-teacher interaction are found only in those classes with a very small student-teacher ratio; most class sizes do not vary enough to change the amount of interaction that takes place (Moes, 1986). Unless the student-teacher ratio drops below 20 to 1, the effects on student performance and teacher satisfaction are small (Glass and Smith, 1978).

The size of classes throughout history has remained fairly constant at between 20 and 40 students. The classroom at Mari could seat up to thirty-five students (see Figure 2-2). The class size of Egyptian schools is uncertain, partly because no room has been specifically identified as a classroom (page 87). Within the Spartan system, squads of boys were organized into larger groups of about sixty-four (page 136), so it might be assumed that a squad consisted of somewhere between sixteen and thirty-two boys if a troop contained two to four squads.

The Spartan method of organizing students into smaller groups was used later in England when it is reported that a teacher in the early 1800's, given the "impossible

task of teaching 120 boys at once" (Archer, 1921, p. 59), divided the class into smaller groups and appointed assistants to supervise them (Archer, 1921, p. 59). The class size in Britain before this had been fairly constant. Although teachers during the fourteenth century reported class sizes of up to seventy students (Orme, 1973, p. 122), it is suspected that numbers such as these may have been inflated by the teachers in their reports to supervisors (Orme, 1973, p. 122). In other schools during the same period, class size was restricted by the school master (Orme, 1973, p. 123). At a school in Willaton in Nottinghamshire, twenty-six students constituted one class (Orme, 1973, p. 123). There is also a report of a class size of twenty-eight students in a 1363 British school (Curtis, 1971, p. 36).

Over the next few centuries these numbers remained fairly constant as indicated by reports that during the 1870's in Canada, the average class sizes in the provinces of New Brunswick, Nova Scotia and Quebec were 35.2, 49.3 and 39.2 students respectively and in 1900 the averages were 36.8, 39.5 and 26.9 students respectively (Leacy, 1983, W150-191). In the United States in 1900, the average class size was 35 students (Husen and Postlethwaite, 1985, p. 729). During the 1920's, average class size was 34.8 students in Britain (Husen and Postlethwaite, 1985, p. 729) and about 30 students in the United States (Deighton, 1971, p. 157-160). It was about the same in other Western countries and by 1960 the average class size in West Germany was 39.9 students, 34.9 students in Japan, 26.7 students in Norway and 27 students in Canada (Educational Research Service, 1978, p. 5-6). In 1972 the average class size was 31 students in West Germany, 24.5 students in Japan, 19.6 students in Norway and 24.7 students in Canada (Educational Research Service, 1978, p. 5-6).

It seems as if there has been very little change in the student-teacher ratio throughout history. This suggests that the level of interaction between the teacher and her students has remained about the same as it was in ancient classrooms. The type of interaction seems to have changed very little from the hierarchical model, and those like McLaren (1989) and Kohl (1967) who deviate from it are met with distrust and resistance.

Counter-Argument 5: Classrooms have changed because the status of the teacher has changed.

It might be argued that the position of the teacher in society is no longer one of power and prestige as it once was when scribal knowledge was scarce and therefore more valuable. In fact, I have made the argument that the esteem of teachers has been lowered by taking away their standing in a profession other than that of teaching the young (see page 198) It could be argued that a reduction in esteem afforded to teachers has led to a reduction in the power of the teacher and a reduction in the level of control exerted by the teacher in the classroom

Rebuttal of Counter-Argument 5: There has been no real change in the power of the teacher with respect to the schoolchildren.

However, I suggest that the esteem of the teacher as an independent professional is of consequence to the teacher and to other adults but hardly matters to the child. The teacher represents a figure of authority regardless of what society thinks of the profession Kohl supports this. He relates how one student was shocked to see him drinking a beer and stayed away from school for days because her image of the teacher as someone almost super-human was in jeopardy (Kohl, 1967, p. 15).

Jackson (1968) says that students are constantly aware of the teacher as a power authority (Jackson, 1968, p. 52-55). Giroux and Penna (1983) say that the child learns in school that the teacher is the authoritative person in the classroom, but that she is subordinate to a principal; the children come below the teacher in the hierarchy of classes of power (Giroux and Penna, 1983, p. 107-108).

Klein (1988) says that children learn early that the teacher is the focus of classroom attention (Klein, 1988, p. 37). This has been the case since the days of the earliest classroom; the teacher as seen by the students is a daily figure of authority and is at the centre of classroom life.

Now that I have clarified my position by examination of these five counter-arguments and have done what I can to refute them, let us consider some of the implications for educators implicit in my position.

SOME IMPLICATIONS FOR EDUCATORS

An awareness of the similarities between the ancient and modern classroom provides the educator with a means to overcome the blindness that is associated with understanding the effects of communications devices such as the classroom (Toynbee, 1988; McLuhan, 1966). Regardless of the advances in communications technology, what has happened in the classroom for the past five thousand years has been the same: the culture of the society has been transmitted to the children. The human interaction between teacher and student has remained at the centre of the classroom despite the adoption of any new communication devices. The classroom has been the tool society uses to control the children and teachers manifest this control in the methods they use and how they communicate with the children.

Classrooms seem to have always been institutions where children are expected to learn proper social habits and come to see the world in a way that conforms to social reality Others have suggested that this has been the purpose of mass education (Katz, 1975; Greer, 1972) I suggest that this has been the purpose of the classroom since its inception and the reason it has persisted in much the same form for 5000 years is that it is the most successful instrument of control The classroom has not survived merely because it is the form with which we are familiar; attempts to change the structure of the classroom have been met with resistance The longevity of the classroom is a testament to its success as an instrument of control

Technological changes have not changed the classroom to the extent it was possible or predicted because for the most part the liberating effects of technology contradict the idealogy of control in the classroom Ellul (1980) says that decentralization and flexibility within society are promoted by the use of modern technology, such as computers. Industrialization on the other hand, led to a centralized, hierarchical society, characterized by division of labour, physically draining human labour and linear growth. Modern technology, if allowed to act will do away with the hierarchy and division of labour and cut down on human labour Growth will be polyvalent and nonlinear in the technological society. On the other hand, industrialized society is a closed and repetitive world with a linear evolution (Ellul, 1980). Conflict is the result when countries are not able to leave the industrial mode of society and modern technology is being forced to serve the development of industrialization and the uses to which technology is being put go against its nature

The same argument could be used to describe what happened to the progressive schools of the early seventies. To extrapolate Ellul's description of

conflict-production to the school system, it seems as if the ideology of the schools lagged behind the use of technology. The desire on the part of society was to maintain the hierarchical and power relationships that have existed in all classrooms; changes in the design and structure of the classroom undermined the hierarchical relationship between teacher and student. Technology had an equalizing effect within the classroom and this conflicted with the ideology of the classroom. Teachers at each juncture of technological development have resisted the effects of new technologies because the new technologies have the potential to undermine their control. Although the structure of the classroom contributes to the control exerted over the young, it is the tendency of teachers to cling to their own pedantics as a means to exert control that prevents any real changes in what goes on within the classroom.

Technology provided opportunities for change within the classroom which were not realized. There were alternatives to the classroom as educational tools during each of the civilizations examined. For example, during the Sumerian and Egyptian civilization, the classroom was but one forum where the young were instructed by the adults. The majority of children did not attend the classroom for instruction (see page 70), and alternatives included private tutors (see page 71). Recent technological innovations provide other alternatives to the classroom, such as linking children together on long distance communications networks, and moving them out of the classroom as Illich (1971), Papert (1979), and Brand (1974) envisioned (see page 2). Yet, the classroom has not only remained the same as when it was first invented by the Sumerians, but it has become the primary tool for mass education in Western civilization.

The reason for this is that the classroom is the alternative that exerts the most control over the young It was the function of the schooling system of each of the societies examined to pass down to the young the important aspects of the culture (see page 185) Education is concerned with transmitting what is worthwhile, and what is determined by society to be worthwhile is culturally defined

It seems it has been considered worthwhile that the young are taught the meaning of power, the importance of control, and the hierarchy of positions within the society These are the lessons that have been consistently communicated to the young by means of the hierarchy of communications between teacher and student and the pedantry of the teachers (see pages 200 - 217) The classroom is a tool used by society to maintain the positions of the powerful within that society, and it seems that teachers have willingly participated in this form of social control with their pedantics

Any uses to which technology has been put would seem to emphasize the control of the classroom and the teachers For example, computers are used to phone the child's home to check on absences and for testing and public address systems are used to disrupt classes with messages It seems that technology has been used to tighten and enhance the control which is characteristic of classrooms and the opportunities it allows for diversity, empowerment and freedom have not been realized

We should expect that future communications innovations will change the classroom to no greater or lesser extent than those communications revolutions of the past Long distance communication devices like radio and television have not had any great effect on the structure of the classroom Although television has had an effect on education (Howe (1983), Lake (1981), Holtzman and Reyes-Lagunes (1981),

Journal of Educational Television. Roberts et al (1993), Beentjes and Vandervoort, (1993)), the classroom remains in much the same form as it has been for the past five millennia. Those who predicted revolutionary changes in the structure of the classroom when television became popular (for a discussion see Schramm, 1972 and Saettler, 1968) were wrong. They did not realize how resistant to change the classroom is.

In the same way, the computer will have profound effects on society, but it is expected that the classroom will look much the same as it has for generations despite the introduction of this communications device. When microcomputers first began to be introduced into the classroom in the early to mid-1980s, there was a belief that the computer would revolutionalize the classroom. After more than ten years, there does not appear to be any clear evidence that this is the case although some research suggests that the use of computer aided instruction can be used to bolster achievement levels when used to supplement other forms of teaching (Johansen & Tennyson, p. 233; D'Souza, p. 135; Henderson, p. 405; Menis, 1980, p.19-22). There remain those who believe that computer technology will change the classroom: in an article reminiscent of McLuhan's 1966 prediction of a global village (see page 2) and the Hall-Dennis Report (see pages 9 to 14), New Brunswick Premier McKenna says that a new computer-based learning program will help to create "schools without walls" and allow students to "jump on the global electronic highway and ride it all the way to prosperity" (Smith, Globe and Mail, 28 Sept. 1993, p. 3). Although the communications device is a *component* of the culture and will change society in ways that cannot be anticipated or fully understood, if the historical pattern holds, it will not

affect the human interaction that characterizes communication within the classroom and the computer will be but another device used by teachers to control the students

Refinements and extensions of the school system must be viewed as simply improvements in the mechanisms of control This study has shown that the classroom has been the instrument of social control since it was first invented, and its success in exerting control explains its longevity and its similarity with earlier models It seems that if the classrocm is to change, it will be when teachers break from the rôle that society has imposed and cease to use their pedantry to control the young in their care

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