

教育技[U+672F]通[U+8BAF]

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C O N N E X I O N S

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Chapter 1

教学 [U+8BBE] [U+8BA1]

1.1 THEORY OF EDUCATION¹

1.2 THEORY OF EDUCATION²

1.3 THEORY OF EDUCATION³

TOPIC:

THEORY OF EDUCATION

INTRODUCTION

Education or **teaching** in the broadest sense is any act or experience that has a formative effect on the mind⁴, character⁵ or physical ability of an individual. In its technical sense education is the process by which society deliberately transmits its accumulated knowledge⁶, skills⁷ and values⁸ from one generation to another.

Teachers⁹ in educational institutions direct the education of students¹⁰ and might draw on many subjects¹¹, including reading¹², writing¹³, mathematics¹⁴, science¹⁵ and history¹⁶. This process is sometimes called schooling¹⁷ when referring to the education of teaching only a certain subject, usually as professors at institutions of higher learning¹⁸. There is also education in fields for those who want specific vocational¹⁹ skills, such as those required to be a pilot. In addition there is an array of education possible at the informal level²⁰, such as in museums and libraries, with the Internet and in life experience. Many

¹This content is available online at <<http://cnx.org/content/m33794/1.1/>>.

²This content is available online at <<http://cnx.org/content/m33792/1.1/>>.

³This content is available online at <<http://cnx.org/content/m33797/1.1/>>.

⁴<http://en.wikipedia.org/wiki/Mind>

⁵<http://en.wikipedia.org/wiki/Character>

⁶<http://en.wikipedia.org/wiki/Knowledge>

⁷<http://en.wikipedia.org/wiki/Skills>

⁸<http://en.wikipedia.org/wiki/Values>

⁹<http://en.wikipedia.org/wiki/Teachers>

¹⁰<http://en.wikipedia.org/wiki/Students>

¹¹<http://en.wikipedia.org/wiki/Subjects>

¹²[http://en.wikipedia.org/wiki/Reading_\(process\)](http://en.wikipedia.org/wiki/Reading_(process))

¹³<http://en.wikipedia.org/wiki/Writing>

¹⁴<http://en.wikipedia.org/wiki/Mathematics>

¹⁵<http://en.wikipedia.org/wiki/Science>

¹⁶<http://en.wikipedia.org/wiki/History>

¹⁷<http://en.wikipedia.org/wiki/School>

¹⁸http://en.wikipedia.org/wiki/Higher_learning

¹⁹http://en.wikipedia.org/wiki/Vocational_education

²⁰http://en.wikipedia.org/wiki/Informal_education

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non-traditional education options are now available and continue to evolve.

The right to education²¹ has been established as a basic human right²² : since 1952, Article 2 of the first Protocol to the European Convention on Human Rights²³ obliges all signatory parties to guarantee the right to education. At world level, the United Nations²⁴ ' International Covenant on Economic, Social and Cultural Rights²⁵ of 1966 guarantees this right under its Article 13.

1.3.1 Systems of formal education

Education is a concept, referring to the process in which students can learn something:

- **Instruction** refers to the facilitating of learning toward identified objectives, delivered either by an instructor or other forms.
- **Teaching** refers to the actions of a real live instructor designed to impart learning to the student.
- **Learning** refers to learning with a view toward preparing learners with specific knowledge, skills, or abilities that can be applied immediately upon completion.

1.3.1.1 Primary education

Primary (or elementary) education consists of the first 5-7 years of formal, structured education. In general, main education consists of six or eight years of schooling starting at the age of five or six, although this varies between, and sometimes within, countries. Globally, around 70% of primary-age children are enrolled in primary education, and this proportion is rising.^[1]²⁶ Under the Education for All programs driven by UNESCO, most countries have committed to achieving universal enrollment in primary education by 2015, and in many countries, it is compulsory for children to receive primary education. The division between primary and secondary education²⁷ is somewhat arbitrary, but it generally occurs at about eleven or twelve years of age. Some education systems have separate middle schools²⁸ , with the transition to the final stage of secondary education taking place at around the age of fourteen. Schools that provide primary education, are mostly referred to as *primary schools*. Primary schools in these countries are often subdivided into infant schools²⁹ and junior schools³⁰ .

1.3.1.2 Secondary education

In most contemporary educational systems of the world, secondary education comprises the formal education that occur during adolescence³¹ . It is characterized by transition from the typically compulsory, comprehensive primary education³² for minors³³ , to the optional, selective tertiary³⁴ , "post-secondary", or "higher³⁵ " education (e.g., university³⁶ , vocational school for adults³⁷ . Depending on the system, schools

²¹http://en.wikipedia.org/wiki/Right_to_education

²²http://en.wikipedia.org/wiki/Human_right

²³http://en.wikipedia.org/wiki/European_Convention_on_Human_Rights

²⁴http://en.wikipedia.org/wiki/United_Nations

²⁵http://en.wikipedia.org/wiki/International_Covenant_on_Economic,_Social_and_Cultural_Rights

²⁶http://en.wikipedia.org/wiki/Education#cite_note-0#cite_note-0

²⁷http://en.wikipedia.org/wiki/Secondary_education

²⁸http://en.wikipedia.org/wiki/Middle_school

²⁹http://en.wikipedia.org/wiki/Infant_school

³⁰http://en.wikipedia.org/wiki/Junior_school

³¹<http://en.wikipedia.org/wiki/Adolescence>

³²http://en.wikipedia.org/wiki/Primary_education

³³[http://en.wikipedia.org/wiki/Minor_\(law\)](http://en.wikipedia.org/wiki/Minor_(law))

³⁴http://en.wikipedia.org/wiki/Tertiary_education

³⁵http://en.wikipedia.org/wiki/Higher_education

³⁶<http://en.wikipedia.org/wiki/University>

³⁷<http://en.wikipedia.org/wiki/Adult>

for this period, or a part of it, may be called secondary or high schools³⁸, gymnasiums³⁹, lyceums⁴⁰, middle schools, colleges⁴¹, or vocational schools. The exact meaning of any of these terms varies from one system to another. The exact boundary between primary and secondary education also varies from country to country and even within them, but is generally around the seventh to the tenth year of schooling. Secondary education occurs mainly during the teenage years. In the United States and Canada primary and secondary education together are sometimes referred to as K-12⁴² education, and in New Zealand Year 1-13 is used. The purpose of secondary education can be to give common knowledge⁴³, to prepare for higher education⁴⁴ or to train directly in a profession⁴⁵.

The emergence of secondary education in the United States did not happen until 1910, caused by the rise in big businesses and technological advances in factories (for instance, the emergence of electrification), that required skilled workers. In order to meet this new job demand, high schools⁴⁶ were created and the curriculum focused on practical job skills that would better prepare students for white collar⁴⁷ or skilled blue collar⁴⁸ work. This proved to be beneficial for both the employer and the employee, because this improvement in human capital caused employees to become more efficient, which lowered costs for the employer, and skilled employees received a higher wage than employees with just primary educational attainment.

In Europe, the grammar school or academy existed from as early as the 1500s; public schools or fee paying schools, or charitable educational foundations have an even longer history.

1.3.1.3

1.3.1.4 Higher education

The University of Cambridge⁴⁹ is an institute of higher learning.

Higher education, also called tertiary, third stage, or post secondary education, is the non-compulsory educational level that follows the completion of a school providing a secondary education, such as a high school, secondary school⁵⁰. Tertiary education is normally taken to include undergraduate⁵¹ and postgraduate education⁵², as well as vocational education and training⁵³. Colleges and universities are the main institutions that provide tertiary education. Collectively, these are sometimes known as tertiary institutions. Tertiary education generally results in the receipt of certificates⁵⁴, diplomas⁵⁵, or academic degrees⁵⁶.

Higher education includes teaching, research and social services activities of universities, and within the realm of teaching, it includes both the *undergraduate* level (sometimes referred to as tertiary education⁵⁷) and the *graduate*⁵⁸ (or *postgraduate*) level (sometimes referred to as graduate school⁵⁹). Higher education generally involves work towards a degree-level or foundation degree⁶⁰ qualification. In most developed

³⁸http://en.wikipedia.org/wiki/High_school

³⁹[http://en.wikipedia.org/wiki/Gymnasium_\(school\)](http://en.wikipedia.org/wiki/Gymnasium_(school))

⁴⁰<http://en.wikipedia.org/wiki/Lyceum>

⁴¹<http://en.wikipedia.org/wiki/College>

⁴²http://en.wikipedia.org/wiki/K-12_education

⁴³http://en.wikipedia.org/wiki/Common_knowledge

⁴⁴http://en.wikipedia.org/wiki/Higher_education

⁴⁵<http://en.wikipedia.org/wiki/Profession>

⁴⁶http://en.wikipedia.org/wiki/High_school

⁴⁷http://en.wikipedia.org/wiki/White-collar_worker

⁴⁸http://en.wikipedia.org/wiki/Blue-collar_worker

⁴⁹http://en.wikipedia.org/wiki/University_of_Cambridge

⁵⁰http://en.wikipedia.org/wiki/Secondary_school

⁵¹<http://en.wikipedia.org/wiki/Undergraduate>

⁵²http://en.wikipedia.org/wiki/Postgraduate_education

⁵³http://en.wikipedia.org/wiki/Vocational_education

⁵⁴<http://en.wikipedia.org/wiki/Certificate>

⁵⁵<http://en.wikipedia.org/wiki/Diploma>

⁵⁶http://en.wikipedia.org/wiki/Academic_degree

⁵⁷http://en.wikipedia.org/wiki/Tertiary_education

⁵⁸http://en.wikipedia.org/wiki/Graduate_student

⁵⁹http://en.wikipedia.org/wiki/Graduate_school

⁶⁰http://en.wikipedia.org/wiki/Foundation_degree

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countries a high proportion of the population (up to 50%) now enter higher education at some time in their lives. Higher education is therefore very important to national economies⁶¹, both as a significant industry in its own right, and as a source of trained and educated personnel for the rest of the economy.

1.3.1.5 Adult education

Adult education has become common in many countries. It takes on many forms, ranging from formal class-based learning to self-directed learning and e-learning⁶². A number of career specific courses such as veterinary⁶³, medical billing and coding, real estate license⁶⁴, bookkeeping⁶⁵ and many more are now available to students through the Internet⁶⁶.

1.3.1.6 Alternative education

Alternative education⁶⁷, also known as *non-traditional education* or *educational alternative*, is a broad term that may be used to refer to all forms of education outside of traditional education⁶⁸ (for all age groups and levels of education). This may include not only forms of education designed for students with special needs (ranging from teenage pregnancy to intellectual disability), but also forms of education designed for a general audience and employing alternative educational philosophies and methods.

Alternatives of the latter type are often the result of education reform⁶⁹ and are rooted in various philosophies⁷⁰ that are commonly fundamentally different from those of traditional compulsory education⁷¹. While some have strong political⁷², scholarly⁷³, or philosophical⁷⁴ orientations, others are more informal associations of teachers and students⁷⁵ dissatisfied with certain aspects of traditional education⁷⁶. These alternatives, which include charter schools⁷⁷, alternative schools⁷⁸, independent schools⁷⁹, and home-based learning⁸⁰ vary widely, but often emphasize the value of small class size, close relationships between students and teachers, and a sense of community⁸¹.

1.3.1.7 Indigenous education

Increasingly, the inclusion of indigenous models of education (methods and content) as an alternative within the scope of formal and non-formal education⁸² systems, has come to represent a significant factor contributing to the success of those members of indigenous communities who choose to access these systems, both as students/learners and as teachers/instructors.

As an educational method, the inclusion of indigenous ways of knowing, learning, instructing, teaching and training, has been viewed by many critical and postmodern scholars as important for ensuring that

⁶¹ <http://en.wikipedia.org/wiki/Economies>

⁶² <http://en.wikipedia.org/wiki/E-learning>

⁶³ <http://en.wikipedia.org/wiki/Veterinary>

⁶⁴ http://en.wikipedia.org/wiki/Real_estate_license

⁶⁵ <http://en.wikipedia.org/wiki/Bookkeeping>

⁶⁶ <http://en.wikipedia.org/wiki/Internet>

⁶⁷ http://en.wikipedia.org/wiki/Alternative_education

⁶⁸ http://en.wikipedia.org/wiki/Traditional_education

⁶⁹ http://en.wikipedia.org/wiki/Education_reform

⁷⁰ http://en.wikipedia.org/wiki/Educational_philosophy

⁷¹ http://en.wikipedia.org/wiki/Compulsory_education

⁷² <http://en.wikipedia.org/wiki/Politics>

⁷³ http://en.wikipedia.org/wiki/Scholarly_method

⁷⁴ <http://en.wikipedia.org/wiki/Philosophy>

⁷⁵ <http://en.wikipedia.org/wiki/Student>

⁷⁶ http://en.wikipedia.org/wiki/Traditional_education

⁷⁷ http://en.wikipedia.org/wiki/Education#School_choice#School_choice

⁷⁸ http://en.wikipedia.org/wiki/Education#Alternative_school#Alternative_school

⁷⁹ http://en.wikipedia.org/wiki/Education#Independent_school#Independent_school

⁸⁰ http://en.wikipedia.org/wiki/Education#Home-based_education#Home-based_education

⁸¹ http://en.wikipedia.org/wiki/Sense_of_community

⁸² http://en.wikipedia.org/wiki/Non-formal_education

students/learners and teachers/instructors (whether indigenous or non-indigenous) are able to benefit from education in a culturally sensitive manner that draws upon, utilizes, promotes and enhances awareness of indigenous traditions.^{[2]⁸³}

For indigenous students or learners, and teachers or instructors, the inclusion of these methods often enhances educational effectiveness, success and learning outcomes by providing education that adheres to their own inherent perspectives, experiences and worldview. For non-indigenous students and teachers, education using such methods often has the effect of raising awareness of the individual traditions and collective experience of surrounding indigenous communities and peoples, thereby promoting greater respect for and appreciation of the cultural realities of these communities and peoples.

In terms of educational content, the inclusion of indigenous knowledge⁸⁴, traditions, perspectives, world-views and conceptions within curricula, instructional materials and textbooks and coursebooks have largely the same effects as the inclusion of indigenous methods in education. Indigenous students and teachers benefit from enhanced academic effectiveness, success and learning outcomes, while non-indigenous students/learners and teachers often have greater awareness, respect, and appreciation for indigenous communities and peoples in consequence of the content that is shared during the course of educational pursuits.^{[3]⁸⁵}

A prime example of how indigenous methods and content can be used to promote the above outcomes is demonstrated within higher education in Canada⁸⁶. Due to certain jurisdictions' focus on enhancing academic success for Aboriginal⁸⁷ learners and promoting the values of multiculturalism⁸⁸ in society, the inclusion of indigenous methods and content in education is often seen as an important obligation and duty of both governmental and educational authorities.^{[4]⁸⁹}

Process of Education

1.3.1.8 Curriculum

An academic discipline⁹⁰ is a branch of knowledge which is formally taught, either at the university, or via some other such method. Each discipline usually has several sub-disciplines or branches, and distinguishing lines are often both arbitrary and ambiguous. Examples of broad areas of academic disciplines include the natural sciences⁹¹, mathematics⁹², computer science⁹³, social sciences⁹⁴, humanities⁹⁵ and applied sciences⁹⁶.^{[5]⁹⁷}

1.3.1.9

1.3.1.10 Learning modalities

There has been work on learning styles⁹⁸ over the last two decades. Dunn and Dunn^{[6]⁹⁹}

⁸³http://en.wikipedia.org/wiki/Education#cite_note-1#cite_note-1

⁸⁴http://en.wikipedia.org/wiki/Indigenous_knowledge

⁸⁵http://en.wikipedia.org/wiki/Education#cite_note-2#cite_note-2

⁸⁶http://en.wikipedia.org/wiki/Higher_education_in_Canada

⁸⁷http://en.wikipedia.org/wiki/Aboriginal_peoples_in_Canada

⁸⁸<http://en.wikipedia.org/wiki/Multiculturalism>

⁸⁹http://en.wikipedia.org/wiki/Education#cite_note-3#cite_note-3

⁹⁰http://en.wikipedia.org/wiki/List_of_academic_disciplines

⁹¹http://en.wikipedia.org/wiki/Natural_science

⁹²<http://en.wikipedia.org/wiki/Mathematics>

⁹³http://en.wikipedia.org/wiki/Computer_science

⁹⁴http://en.wikipedia.org/wiki/Social_sciences

⁹⁵<http://en.wikipedia.org/wiki/Humanities>

⁹⁶http://en.wikipedia.org/wiki/Applied_science

⁹⁷http://en.wikipedia.org/wiki/Education#cite_note-4#cite_note-4

⁹⁸http://en.wikipedia.org/wiki/Learning_styles

⁹⁹http://en.wikipedia.org/wiki/Education#cite_note-5#cite_note-5

time as Joseph Renzulli¹⁰⁰ ^[7]¹⁰¹ recommended varying teaching strategies. Howard Gardner¹⁰² ^[8]¹⁰³ identified individual talents or aptitudes in his Multiple Intelligences¹⁰⁴ theories. Based on the works of Jung¹⁰⁵, the Myers-Briggs Type Indicator¹⁰⁶ and Keirsey Temperament Sorter¹⁰⁷ ^[9]¹⁰⁸ focused on understanding how people's personality affects the way they interact personally, and how this affects the way individuals respond to each other within the learning environment. The work of David Kolb¹⁰⁹ and Anthony Gregorc¹¹⁰'s Type Delineator^[10]¹¹¹ follows a similar but more simplified approach.

It is currently fashionable to divide education into different learning "modes". The learning modalities^[11]¹¹² are probably the most common:^[12]¹¹³

- Visual¹¹⁴ : learning based on observation and seeing what is being learned.
- Auditory¹¹⁵ : learning based on listening to instructions/information.
- Kinesthetic¹¹⁶ : learning based on hands-on work and engaging in activities.

It is claimed that, depending on their preferred learning modality, different teaching techniques have different levels of effectiveness.^[13]¹¹⁷ A consequence of this theory is that effective teaching should present a variety of teaching methods which cover all three learning modalities so that different students have equal opportunities to learn in a way that is effective for them.^[14]¹¹⁸ Guy Claxton has questioned the extent that learning styles¹¹⁹ such as VAK are helpful, particularly as they can have a tendency to label children and therefore restrict learning.^[15]¹²⁰

1.3.1.11 Teaching

Teachers need to understand a subject enough to convey its essence to students. While traditionally this has involved lecturing on the part of the teacher, new instructional strategies such as team-based learning¹²¹ put the teacher more into the role of course designer, discussion facilitator, and coach and the student more into the role of active learner, discovering the subject of the course. In any case, the goal is to establish a sound knowledge base and skill set on which students will be able to build as they are exposed to different life experiences. Good teachers can translate information, good judgment, experience and wisdom into relevant knowledge that a student can understand, retain and pass to others. Studies from the US suggest that the quality of teachers is the single most important factor affecting student performance, and that countries which score highly on international tests have multiple policies in place to ensure that the teachers they employ are as effective as possible. ^[16]¹²²

¹⁰⁰http://en.wikipedia.org/wiki/Joseph_Renzulli

¹⁰¹http://en.wikipedia.org/wiki/Education#cite_note-6#cite_note-6

¹⁰²http://en.wikipedia.org/wiki/Howard_Gardner

¹⁰³http://en.wikipedia.org/wiki/Education#cite_note-7#cite_note-7

¹⁰⁴http://en.wikipedia.org/wiki/Multiple_Intelligences

¹⁰⁵<http://en.wikipedia.org/wiki/Jung>

¹⁰⁶http://en.wikipedia.org/wiki/Myers-Briggs_Type_Indicator

¹⁰⁷http://en.wikipedia.org/wiki/Keirsey_Temperament_Sorter

¹⁰⁸http://en.wikipedia.org/wiki/Education#cite_note-8#cite_note-8

¹⁰⁹http://en.wikipedia.org/wiki/David_Kolb

¹¹⁰http://en.wikipedia.org/wiki/Anthony_Gregorc

¹¹¹http://en.wikipedia.org/wiki/Education#cite_note-9#cite_note-9

¹¹²http://en.wikipedia.org/wiki/Education#cite_note-10#cite_note-10

¹¹³http://en.wikipedia.org/wiki/Education#cite_note-11#cite_note-11

¹¹⁴<http://en.wikipedia.org/wiki/Visual>

¹¹⁵<http://en.wikipedia.org/wiki/Auditory>

¹¹⁶<http://en.wikipedia.org/wiki/Kinesthetic>

¹¹⁷http://en.wikipedia.org/wiki/Education#cite_note-12#cite_note-12

¹¹⁸http://en.wikipedia.org/wiki/Education#cite_note-13#cite_note-13

¹¹⁹http://en.wikipedia.org/wiki/Learning_styles

¹²⁰http://en.wikipedia.org/wiki/Education#cite_note-titleGuy_Claxton_speaking_on_What.27s_The_Point_of_School-14#cite_note-titleGuy_Claxton_speaking_on_What.27s_The_Point_of_School-14

¹²¹http://en.wikipedia.org/wiki/Team-based_learning

¹²²http://en.wikipedia.org/wiki/Education#cite_note-WRS-15#cite_note-WRS-15

1.3.1.12

1.3.1.13 Technology

Technology is an increasingly influential factor in education. Computers and mobile phones are used in developed countries both to complement established education practices and develop new ways of learning such as online education¹²³ (a type of distance education). This gives students the opportunity to choose what they are interested in learning. The proliferation of computers also means the increase of programming and blogging. Technology offers powerful learning tools that demand new skills and understandings of students, including Multimedia¹²⁴, and provides new ways to engage students, such as Virtual learning environments¹²⁵. Technology is being used more not only in administrative duties in education but also in the instruction of students. The use of technologies such as PowerPoint¹²⁶ and interactive whiteboard¹²⁷ is capturing the attention of students in the classroom. Technology is also being used in the assessment of students. One example is the Audience Response System¹²⁸ (ARS), which allows immediate feedback tests and classroom discussions.

Information and communication technologies (ICTs) are a “diverse set of tools and resources used to communicate, create, disseminate, store, and manage information.”^{[17]129} These technologies include computers, the Internet, broadcasting technologies (radio and television), and telephony. There is increasing interest in how computers and the Internet can improve education at all levels, in both formal and non-formal settings.^{[18]130} Older ICT technologies, such as radio and television, have for over forty years been used for open and distance learning, although print remains the cheapest, most accessible and therefore most dominant delivery mechanism in both developed and developing countries.^{[19]131}

The use of computers and the Internet is in its infancy in developing countries, if these are used at all, due to limited infrastructure and the attendant high costs of access. Usually, various technologies are used in combination rather than as the sole delivery mechanism. For example, the Kothmale Community Radio Internet uses both radio broadcasts and computer and Internet technologies to facilitate the sharing of information and provide educational opportunities in a rural community in Sri Lanka.^{[20]132} The Open University of the United Kingdom (UKOU), established in 1969 as the first educational institution in the world wholly dedicated to open and distance learning, still relies heavily on print-based materials supplemented by radio, television and, in recent years, online programming.^{[21]133} Similarly, the Indira Gandhi National Open University in India combines the use of print, recorded audio and video, broadcast radio and television, and audio conferencing technologies.^{[22]134}

The term "computer-assisted learning" (CAL) has been increasingly used to describe the use of technology in teaching.

1.3.2 Educational theory

Education theory¹³⁵ is the theory of the purpose, application and interpretation of education and learning. Its history begins with classical Greek educationalists and sophists and includes, since the 18th century, pedagogy and andragogy. In the 20th century, "theory" has become an umbrella term for a variety of scholarly approaches to teaching, assessment and education law, most of which are informed by various academic fields, which can be seen in the below sections.

¹²³http://en.wikipedia.org/wiki/Online_education

¹²⁴http://en.wikipedia.org/wiki/Multimedia_learning

¹²⁵http://en.wikipedia.org/wiki/Virtual_learning_environment

¹²⁶http://en.wikipedia.org/wiki/Microsoft_PowerPoint

¹²⁷http://en.wikipedia.org/wiki/Interactive_whiteboard

¹²⁸http://en.wikipedia.org/wiki/Audience_response#Audience_Response_Systems

¹²⁹http://en.wikipedia.org/wiki/Education#cite_note-16#cite_note-16

¹³⁰http://en.wikipedia.org/wiki/Education#cite_note-17#cite_note-17

¹³¹http://en.wikipedia.org/wiki/Education#cite_note-18#cite_note-18

¹³²http://en.wikipedia.org/wiki/Education#cite_note-19#cite_note-19

¹³³http://en.wikipedia.org/wiki/Education#cite_note-20#cite_note-20

¹³⁴http://en.wikipedia.org/wiki/Education#cite_note-21#cite_note-21

¹³⁵http://en.wikipedia.org/wiki/Education_theory

1.3.3 Economics

It has been argued that high rates of education are essential for countries to be able to achieve high levels of economic growth¹³⁶.^[23]¹³⁷ Empirical analyses tend to support the theoretical prediction that poor countries should grow faster than rich countries because they can adopt cutting edge technologies already tried and tested by rich countries. However, technology transfer¹³⁸ requires knowledgeable managers and engineers who are able to operate new machines or production practices borrowed from the leader in order to close the gap through imitation. Therefore, a country's ability to learn from the leader is a function of its stock of "human capital"¹³⁹.^[24]¹⁴⁰ Recent study of the determinants of aggregate economic growth have stressed the importance of fundamental economic institutions^[25]¹⁴¹ and the role of cognitive skills.^[26]¹⁴²

At the individual level, there is a large literature, generally related back to the work of Jacob Mincer¹⁴³,^[27]¹⁴⁴ on how earnings are related to the schooling and other human capital of the individual. This work has motivated a large number of studies, but is also controversial. The chief controversies revolve around how to interpret the impact of schooling.^[28]¹⁴⁵

Economists Samuel Bowles¹⁴⁶ and Herbert Gintis famously argued in 1976 that there was a fundamental conflict in American schooling between the egalitarian¹⁴⁷ goal of democratic participation and the inequalities implied by the continued profitability of capitalist production on the other.^[29]¹⁴⁸

1.3.4

1.3.5 History OF EDUCATION

The history of education according to Dieter Lenzen, president of the Freie Universität Berlin¹⁴⁹ 1994 "began either millions of years ago or at the end of 1770". Education as a science cannot be separated from the educational traditions that existed before. Adults trained the young of their society in the knowledge and skills they would need to master and eventually pass on. The evolution of culture, and human beings as a species depended on this practice of transmitting knowledge. In pre-literate societies this was achieved orally and through imitation. Story-telling continued from one generation to the next. Oral language developed into written symbols and letters. The depth and breadth of knowledge that could be preserved and passed soon increased exponentially. When cultures began to extend their knowledge beyond the basic skills of communicating, trading, gathering food, religious practices, etc, formal education, and schooling, eventually followed. Schooling in this sense was already in place in Egypt between 3000 and 500BC.

Nowadays some kind of education is compulsory to all people in most countries. Due to population growth and the proliferation of compulsory education, UNESCO¹⁵⁰ has calculated that in the next 30 years more people will receive formal education than in all of human history thus far.^[30]¹⁵¹

¹³⁶http://en.wikipedia.org/wiki/Economic_growth

¹³⁷http://en.wikipedia.org/wiki/Education#cite_note-22#cite_note-22

¹³⁸http://en.wikipedia.org/wiki/Technology_transfer

¹³⁹http://en.wikipedia.org/wiki/Human_capital

¹⁴⁰http://en.wikipedia.org/wiki/Education#cite_note-23#cite_note-23

¹⁴¹http://en.wikipedia.org/wiki/Education#cite_note-24#cite_note-24

¹⁴²http://en.wikipedia.org/wiki/Education#cite_note-25#cite_note-25

¹⁴³http://en.wikipedia.org/wiki/Jacob_Mincer

¹⁴⁴http://en.wikipedia.org/wiki/Education#cite_note-26#cite_note-26

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¹⁴⁶[http://en.wikipedia.org/wiki/Samuel_Bowles_\(economist\)](http://en.wikipedia.org/wiki/Samuel_Bowles_(economist))

¹⁴⁷<http://en.wikipedia.org/wiki/Egalitarianism>

¹⁴⁸http://en.wikipedia.org/wiki/Education#cite_note-28#cite_note-28

¹⁴⁹http://en.wikipedia.org/wiki/Freie_Universitat_Berlin

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¹⁵¹http://en.wikipedia.org/wiki/Education#cite_note-29#cite_note-29

1.3.6

1.3.7 Philosophy

The history of education according to Dieter Lenzen, president of the Freie Universität Berlin¹⁵² 1994 "began either millions of years ago or at the end of 1770". Education as a science cannot be separated from the educational traditions that existed before. Adults trained the young of their society in the knowledge and skills they would need to master and eventually pass on. The evolution of culture, and human beings as a species depended on this practice of transmitting knowledge. In pre-literate societies this was achieved orally and through imitation. Story-telling continued from one generation to the next. Oral language developed into written symbols and letters. The depth and breadth of knowledge that could be preserved and passed soon increased exponentially. When cultures began to extend their knowledge beyond the basic skills of communicating, trading, gathering food, religious practices, etc, formal education, and schooling, eventually followed. Schooling in this sense was already in place in Egypt between 3000 and 500BC.

Nowadays some kind of education is compulsory to all people in most countries. Due to population growth and the proliferation of compulsory education, UNESCO¹⁵³ has calculated that in the next 30 years more people will receive formal education than in all of human history thus far.^{[30]154}

1.3.8

1.3.9 Philosophy

Educational psychology¹⁵⁵ is the study of how humans learn in educational settings, the effectiveness of educational interventions, the psychology of teaching, and the social psychology¹⁵⁶ of schools¹⁵⁷ as organizations¹⁵⁸. Although the terms "educational psychology" and "school psychology" are often used interchangeably, researchers and theorists are likely to be identified as educational psychologists¹⁵⁹, whereas practitioners in schools or school-related settings are identified as school psychologists¹⁶⁰. Educational psychology is concerned with the processes of educational attainment in the general population and in sub-populations such as gifted¹⁶¹ children and those with specific disabilities¹⁶².

Educational psychology can in part be understood through its relationship with other disciplines. It is informed primarily by psychology¹⁶³, bearing a relationship to that discipline analogous to the relationship between medicine¹⁶⁴ and biology¹⁶⁵. Educational psychology in turn informs a wide range of specialties within educational studies, including instructional design¹⁶⁶, educational technology¹⁶⁷, curriculum development, organizational learning¹⁶⁸, special education and classroom management¹⁶⁹. Educational psychology both draws from and contributes to cognitive science¹⁷⁰ and the learning sciences¹⁷¹. In universities, departments of educational psychology are usually housed within faculties of education, possibly accounting for

¹⁵²http://en.wikipedia.org/wiki/Freie_Universität_Berlin

¹⁵³<http://en.wikipedia.org/wiki/UNESCO>

¹⁵⁴http://en.wikipedia.org/wiki/Education#cite_note-29#cite_note-29

¹⁵⁵http://en.wikipedia.org/wiki/Educational_psychology

¹⁵⁶http://en.wikipedia.org/wiki/Social_psychology

¹⁵⁷<http://en.wikipedia.org/wiki/School>

¹⁵⁸<http://en.wikipedia.org/wiki/Organization>

¹⁵⁹http://en.wikipedia.org/wiki/Category:Educational_psychologists

¹⁶⁰http://en.wikipedia.org/wiki/School_psychologist

¹⁶¹<http://en.wikipedia.org/wiki/Gifted>

¹⁶²<http://en.wikipedia.org/wiki/Disabilities>

¹⁶³<http://en.wikipedia.org/wiki/Psychology>

¹⁶⁴<http://en.wikipedia.org/wiki/Medicine>

¹⁶⁵<http://en.wikipedia.org/wiki/Biology>

¹⁶⁶http://en.wikipedia.org/wiki/Instructional_design

¹⁶⁷http://en.wikipedia.org/wiki/Educational_technology

¹⁶⁸http://en.wikipedia.org/wiki/Organizational_learning

¹⁶⁹http://en.wikipedia.org/wiki/Classroom_management

¹⁷⁰http://en.wikipedia.org/wiki/Cognitive_science

¹⁷¹http://en.wikipedia.org/wiki/Learning_sciences

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the lack of representation of educational psychology content in introductory psychology textbooks (Lucas, Blazek, & Raley, 2006).

1.3.10

1.3.11 Sociology

The sociology of education¹⁷² is the study of how social institutions and forces affect educational processes and outcomes, and vice versa. By many, education is understood to be a means of overcoming handicaps, achieving greater equality and acquiring wealth and status for all (Sargent 1994). Learners may be motivated by aspirations for progress and betterment. Education is perceived as a place where children can develop according to their unique needs and potentialities.^{[32]173} The purpose of education can be to develop every individual to their full potential. The understanding of the goals and means of educational socialization¹⁷⁴ processes differs according to the sociological paradigm¹⁷⁵ used.

1.3.12

1.3.13 Educational Development

In developing countries, the number and seriousness of the problems faced are naturally greater. People in more remote or agrarian areas are sometimes unaware of the importance of education. However, many countries have an active Ministry¹⁷⁶ of Education, and in many subjects, such as foreign language learning, the degree of education is actually much higher than in industrialized countries; for example, it is not at all uncommon for students in many developing countries to be reasonably fluent in multiple foreign languages, whereas this is much more of a rarity in the supposedly "more educated" countries where much of the population is in fact monolingual.

There is also economic pressure from those parents who prefer their children making money in the short term over any long-term benefits of education. Recent studies on child labor and poverty have suggested that when poor families reach a certain economic threshold where families are able to provide for their basic needs, parents return their children to school. This has been found to be true, once the threshold has been breached, even if the potential economic value of the children's work has increased since their return to school.

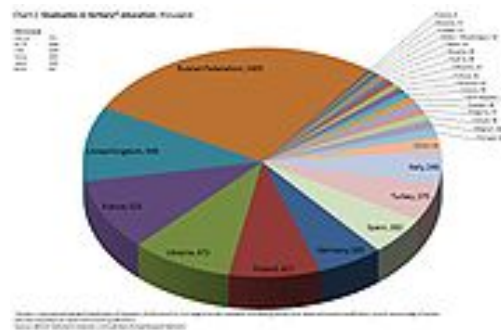


Figure 1.1

¹⁷²http://en.wikipedia.org/wiki/Sociology_of_education

¹⁷³http://en.wikipedia.org/wiki/Education#cite_note-31#cite_note-31

¹⁷⁴<http://en.wikipedia.org/wiki/Socialization>

¹⁷⁵http://en.wikipedia.org/wiki/Sociological_paradigm

¹⁷⁶[http://en.wikipedia.org/wiki/Ministry_\(government_department\)](http://en.wikipedia.org/wiki/Ministry_(government_department))

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Russia¹⁷⁸ has more academic graduates than any other country in Europe¹⁷⁹ .

A lack of good universities, and a low acceptance rate for good universities, is evident in countries with a high population density. In some countries, there are uniform, over structured, inflexible centralized programs from a central agency that regulates all aspects of education.

- Due to globalization¹⁸⁰ , increased pressure on students in curricular activities
- Removal of a certain percentage of students for improvisation of academics (usually practised in schools, after 10th grade)

India is now developing technologies that will skip land based phone and internet lines. Instead, India launched EDUSAT¹⁸¹ , an education satellite that can reach more of the country at a greatly reduced cost. There is also an initiative started by the OLPC foundation¹⁸² , a group out of MIT Media Lab¹⁸³ and supported by several major corporations to develop a \$100 laptop¹⁸⁴ to deliver educational software. The laptops are widely available as of 2009. The laptops are sold at cost or given away based on donations. These will enable developing countries to give their children a digital education, and help close the digital divide across the world.

In Africa, NEPAD¹⁸⁵ has launched an "e-school programme¹⁸⁶ " to provide all 600,000 primary and high schools with computer equipment, learning materials and internet access within 10 years. Private groups, like The Church of Jesus Christ of Latter-day Saints¹⁸⁷ , are working to give more individuals opportunities to receive education in developing countries through such programs as the Perpetual Education Fund¹⁸⁸ . An International Development Agency project called nabuur.com¹⁸⁹ , started with the support of American President Bill Clinton¹⁹⁰ , uses the Internet¹⁹¹ to allow co-operation by individuals on issues of social development.

1.3.13.1 Summary

Education is becoming increasingly international. Not only are the materials becoming more influenced by the rich international environment, but exchanges among students at all levels are also playing an increasingly important role. In Europe, for example, the Socrates-Erasmus Programme¹⁹² stimulates exchanges across European universities. Also, the Soros Foundation¹⁹³ provides many opportunities for students from central Asia and eastern Europe. Some scholars argue that, regardless of whether one system is considered better or worse than another, experiencing a different way of education can often be considered to be the most important, enriching element of an international learning experience.^{[33]194}

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Chapter 2

教育信息化

Index of Keywords and Terms

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