

## *Social Inventions*

Social inventions are new ways in which people relate to themselves or to each other, individually or collectively. Social inventions can be classified as procedures, organizations or laws. A social invention (like all inventions) takes place only once. After that point in history it becomes an innovation when introduced into a new setting.

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This Timetable of Educational Inventions was prepared as part of the background research for *Social Inventions*, published in the Books section of *The Innovation Journal* ([www.innovation.cc](http://www.innovation.cc)). Stu Conger ([stu.conger@sympatico.ca](mailto:stu.conger@sympatico.ca)) and the Editor-in-Chief of *The Innovation Journal* ([eglor@magma.ca](mailto:eglor@magma.ca)) welcome suggestions from readers for additions and corrections. Please send us sufficient information to fill in the Table, and a written, quotable source for the information.

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March 8, 2003

**Table 1: Timetable of Educational Inventions**

<b>Invention</b>	<b>When</b>	<b>Where</b>	<b>Who</b>	<b>Why</b>
Oral examination	Pre 3500 BC  (Ref.: 5, p.20)	Wherever primitive tribes lived	Primitive tribes	“Probably the initiation ceremonies by which primitive tribes have tested the knowledge of tribal customs, endurance, and bravery of their men prior to their admission to the ranks of adult males are among the earliest examinations employed by human beings.”
Pictographic symbols	3500 BC  (Ref.: 25, p.36)	Sumer	Priests	Pictographic symbols or signs developed as a method of record keeping concerning property and business dealings of the temples.
Cuneiform writing	3000 BC  (Ref.: 11, pp. 634-637)	Sumer	Sumerians	Sumerians began to write when they began to associate sounds with various symbols. Cuneiform writing was more efficient than using pictographs.

<b>Invention</b>	<b>When</b>	<b>Where</b>	<b>Who</b>	<b>Why</b>
Shorthand	3000 BC  (Ref.:25, pp.57-58)	Egypt	Scribes	Heiratic script, a kind of shorthand, was to be used for all practical purposes of state, economy and science. It was much simpler to use than the ‘pictograph like’ hieroglyphics.
Tuition fees	2500 BC  (Ref.: 9, p. 663)	Sumer	Higher Classes	“In private schools at any rate the headmaster had to make his living by means of tuition fees collected from students.”
School- Elementary and secondary, (no distinction was made)	2500 BC  (Ref.:10, pp. 2; 9, pp. 658- 63)	Sumer	Priests	“First established for purpose of training the scribes required to satisfy the economic and administrative demands of the land, primarily those of the temple and palace.” Usually attached to temple.
University	2500 BC (Ref.: 3, p.99)	Sumer	Sumerians	Schools of higher education were called houses of wisdom. Higher education included linguistics, theology, magic arts and medicine, astronomy and mathematics. Usually associated with a temple.
University- higher and professional education	2300 BC	Egypt	Priests	“Teachers were themselves professional men”, and they used various places for instruction. “They had many manuscripts in literature, history, and science, and these manuscripts formed a kind of base around which professional studies were built.”
Written examina- tions	2200 BC (Ref.: 8, p. 37)	China	National Govern- ment	“China had an elaborate national system of examinations for the purpose of selecting her public officials and these examinations have been know through the ages for their unusual severity.”

<b>Invention</b>	<b>When</b>	<b>Where</b>	<b>Who</b>	<b>Why</b>
Textbooks “manuals of instruction”	2000 BC (Ref.: 25, pp. 56-60)	Egypt	Those who taught scribes	The “Manuals” were used as models in learning to read and write the language, define social goals, and aid instruction in schools.
Staff training; ‘department schools’	2000 BC (Ref.: 25, p. 59)	Egypt	Heads of Egyptian bureaus or departments (civil service)	Bureaucrats required personnel trained to work in government departments; e.g., the Egyptian treasury required scribes with accounting skills, hence the would train ‘silver scribes’. The military would train their own scribes.
Professional associations	1700 BC (Ref.: 25, p. 44)	Mesopotamia	Diviners, Priests	These highly educated professionals formed associations for mutual protection against political and social upheavals and to preserve their knowledge.
Pictosyllabic script	1700 BC (Ref.: 25, p.74)	Crete	Minoans	As this ‘script’ has never been fully deciphered, interpretation is difficult; yet it is thought to have been an attempt to record history.
Written language	1500 BC (Ref.: 25, pp. 77-78)	Mycenaean Greece	Greeks	It was not yet a fully developed written language; but it served its purpose of maintaining contact among several Mediterranean societies existing side by side.
Fully developed alphabet	800 BC (Ref.: 25, p. 83)	Greece	Teacher-Scholars	The ‘innovation’ of symbols for verbs was the culmination of a truly ‘written’ alphabet; the alphabet served to make reading and writing much easier; contact among scholars was more easily maintained.
State control of education	594 BC (Ref.: 15, pp. 56-57)	Athens	Solon	“...The state was vested with authority to supervise education. However in actual practice the state was reluctant to use this authority.”

<b>Invention</b>	<b>When</b>	<b>Where</b>	<b>Who</b>	<b>Why</b>
Education available to all social classes	500 BC (Ref.: 25, pp 81-89)	Athens	The State	The Athenian concept was good citizenship should include an education for the young, whose family could pay the fees.
Education benefits for the male children of veterans	500 BC (Ref.: 25, p. 87)	Athens	The State	The Athenian government recognized an obligation to soldiers who had been killed; hence they paid the educational fees for boys whose fathers had been killed in wars.
Teachers' contract-sophists	445 BC (Ref.: 15, p. 78)	Athens	Protagoras	"The innovation in educational practices introduced by the Sophists was to contract with the students for a course of instructions which may have lasted as long as three years."
Compulsory military education	335 BC (Ref.: 25, p. 101)	Athens	Athenian Assembly	Recurring wars forced state intervention in education, namely military training, to preserve the very existence of Athens.
"Socratic" method of education	300 BC (Ref.: 25, p. 93)	Athens	Socrates	This method, one of question and answer, was an alternative to memorization of what others had said; it was a necessary innovation in making education a dynamic process.
Elementary schools (as distinct from secondary) to teach Latin	200 BC (Ref.: 25, p. 118)	Rome	Roman Scholars	Such schools met nationalistic demands to make Latin the national language of Republican Rome: the advancement of Latin was furthered.
State schools	46 BC (Ref.: 21, p. 93)	Rome	Caesar	"The beginnings of a system of state-schools were laid by Caesar, when he gave the franchise not only to all doctors who were living at Rome or should settle there, but also to all teachers of liberal arts.

<b>Invention</b>	<b>When</b>	<b>Where</b>	<b>Who</b>	<b>Why</b>
State supported schools	75 AD (Ref.: 21, pp. 93-94; 2, p.12)	Rome	Vespasian	“The first endowment on the part of the state was due to Vespasian, who was the first to endow Latin and Greek rhetoricians with a stipend of 100, 000 sesterces to be paid from the Imperial Treasury.”
Government grants to selected educational institutes	100 AD (Ref.: 25, p. 123)	Rome	Emperors such as Vespasian and Antonius Pius	Usually these grants were the result of vested interests; e.g., schools attended by members of wealthy families might receive a grant; these grants offset the cost of paying teachers which had been made a municipal matter by Antonius Pius.
Bilingual education	100 AD (exact date uncertain) Ref.: 25, p. 123)	Rome	Roman Scholars	It was felt a Roman scholar would be much better educated if he knew both Greek and Latin.
Catechetical method-catechetical classes and schools	100 AD (Ref.: 20, p. 106; 15, p. 236)	Alexandria	Established Philosophers	“The older and more experienced Christians prepared lists of questions most frequently raised by non-believers provided well-thought-out answers for each question and its answer... were to be taught to the younger missionaries...”
Municipal support of teachers	140 AD (Ref.: 25, pp. 123-24)	Rome	Antonius Pius	Antonius Pius desired to see the public treasury relieved of some of the costs of education; hence laid upon the cities the obligation of paying teacher salaries.
Monastic schools	350 AD (Ref.: 15, p. 241)	Europe	Monks	“Monastic schools... were the first Christian schools. Their religious purposes were entirely clear, but they had literary objectives intended to supplement and complement moral and religious formation.”

<b>Invention</b>	<b>When</b>	<b>Where</b>	<b>Who</b>	<b>Why</b>
'Licensed' teachers (by appointment)	362 AD (Ref.: 21, p. 96; 2, p. 12; 15, p. 209)	Rome	Emperor Julian	"Julian in AD 362 asserts the right of the Emperor to revise the appointments to professorships. Hitherto it had been the exception for the Emperor to make the nomination himself..."
Schedule of teachers' salaries	376 AD (Ref.: 21, p. 96; 2, p. 12)	Roman Empire	Emperor Gratian	"in AD 376.... the Emperor Gratian issued an edict which....fixed the salaries which were given."
State supported university	410 AD (Ref.: 25, p. 124)	Constantinople	Emperor Theodosius (408-50)	Roman interest in higher education had reached its zenith; Theodosius II set up the university to meet this interest.
Schools to educate clergymen	782 AD	Europe	Charlemagne	Many clergymen (monks) were poorly educated, if not illiterate. Charlemagne set up schools to remedy this situation.
School of public administration	782 AD (Ref.: 25, p. 150)	Aachen	Charlemagne	Educated personnel for the administration of the Holy Roman Empire and operation of schools were needed.
Cathedral schools	825 AD (Ref. 20, p. 190; 15, p. 292)	Rome	Council of Churchmen	A council in Rome "made it clear that specific instruction should be given in schools connected with the cathedrals. Furthermore these schools.... were to be of a more advanced nature than the classes which taught the elements of religion."
Grammar study	825 AD (Ref.: 20, p. 110)	France	Cathedral Schools	"The first requirement of the students was to learn the languages of church literature.... The instruction was given a grammatical orientation with much attention to the rules and special vocabulary of religious office."

<b>Invention</b>	<b>When</b>	<b>Where</b>	<b>Who</b>	<b>Why</b>
Schooling on a parish basis	853 AD (Ref 25, p. 152)	Europe	Council of Rome	Organization of schooling was needed; only the church had sufficient organization to provide widespread education in rural areas; the priest was responsible for the schooling of boys in his parish.
Modern university- university of Paris	1000 AD (Ref.: 20, p. 192)	Paris	Abelard	It is generally agreed that the work of... Abelard... contributed substantially to the formation in Paris of a general body of students who had completed the studies provided at the lesser collegiate and cathedral centres. It was out of the body of advanced students that the institution which became the University of Paris was formed.
Grammar schools	1100 AD (Ref.: 20, p. 197)	Europe	Priests	“To meet the need for proficiency in Latin, the collegiate and cathedral schools began to give more attention to the technicalities of Latin grammar. These schools... took on more of the nature of preparatory schools.
Deductive approach- deductive logic	1100 AD (Ref.: 20, p. 198)	Europe	Priests	“The university scholar in the days of scholasticism was expected to be proficient as a dialectician. Therefore, formal study in the process of deductive logic came to occupy an important place in the curriculum of the preparatory or grammar schools.”
Licensing of teachers by qualifications	1179 AD (Ref.: 25, p. 163)	Europe (parishes)	The Third Lateran Council of the Roman Catholic Church	It was decided that those who were to teach must have proper qualifications to preserve a standard of education. Every cathedral school was to have a licensed teacher.

<b>Invention</b>	<b>When</b>	<b>Where</b>	<b>Who</b>	<b>Why</b>
Secular town schools	1200 AD (Ref.: 25, pp. 163-64)	Germany	Town Councils	Municipal authorities wished a greater say in local education; they set up schools under their own jurisdiction where they would make the decisions about the schools.
Faculty association	1212 AD (Ref.: 25, p. 178)	Vatican City	Pope Innocent III	To provide protection for teachers against outside influence, Innocent III granted the right to form such associations.
Granting of a degree (“licentia”)	1215 AD (Ref.: 25, p. 179)	University of Paris	Faculty of Arts	To regulate and control school entrance, study and advancement to faculty posts.
Public school	1382 AD (Ref.: 25, p. 164)	Winchester England	William of Wykeham	Some teachers wished to be free of church influence and earn their living by teaching; increasing secular power allowed this development.
Humanistic school	1428 AD (Ref.: 20, pp. 202-3)	Mantua	School of Victorino de Feltre	“His object became that of preparing the sons of his elite patrons for their adult roles as men of affairs. To this end he utilized the historical, scientific and philosophical context of the newly recovered learning.”
Boarding school	1428 AD (Ref.: 20, p. 203)	Mantua	Victorino de Feltre	“It was, in fact, the forerunner of a long line of famous boarding schools, some of which, notably several of the great public schools of England, are still in existence today.”
High schools	1525 AD (Ref.: 23, pp. 191, 194)	Nuremberg, Germany	Melanchthon	Education was divided into two levels; grammar and high schools: to ensure “that pupils shall not pass to more advanced subjects until they are fit for them”.

<b>Invention</b>	<b>When</b>	<b>Where</b>	<b>Who</b>	<b>Why</b>
Vernacular reading schools-parochial school	1528 AD (Ref.: 20, p. 116; 15, pp. 385-7; 4, pp. 79-81)	Brunswick, Germany	Johannes Bugenhagen	“The interests of the Protestant Reformers in offering instruction in reading marks the beginning of the parochial school movement identified with some sects even to this day.” Luther formulated educational ideas but it was left to Bugenhagen to put them into effect.
Concept of grades or forms	1537 AD (Ref.: 20, pp. 203-4; 91-2; 15 p. 395)	Strasbourg	Johannes Sturm	“The practice of dividing the curriculum of the new grammar schools into grades and forms seems to have been introduced by Johannes Sturm...” “Each class had a definite objective and the work to be accomplished during the year was set down with absolute detail.”
Society of Jesus (Jesuits)	1540 AD (Ref.:25, pp. 188-189)	Paris	Ignatius Loyola	Formed to ‘re-educate’ those who had fallen onto the paths of heresy; their system of schools was very efficient.
Inductive approach -inductive logic -emphasis on mathematics	1600 AD (Ref.: 20, pp. 205)	Europe	Rationalists	“The deductive logic.. was now replaced by the rules of inductive logic; and mathematical subjects replaced the disputations as exercises in the use of reasoning as the method of inquiry.”.
Method of instruction for teaching languages	1632 AD (Ref.: 23, pp. 234)	Poland	Comenius	To systematize and make more efficient the instruction of language classes; aid in pursuit multilingualism. Comparison and correlation of different language structures and symbols to show how another language should be spoken.
Phonetic method of teaching reading	1639 AD (Ref.: 23, pp. 260)	France	Pascal	“Sound-values” for letters were used to help people learn to read more easily and efficiently.

<b>Invention</b>	<b>When</b>	<b>Where</b>	<b>Who</b>	<b>Why</b>
School book with pictures	1652 AD (Ref.: 25, pp. 188)	Hungary	Comenius	To aid students in understanding the subject matter; keep interest in the book high.
Forcing teachers to conform to state policies	1662 AD (Ref.: 25, pp. 188)	England	Charles II	Education was being taken from church control and used to inculcate state aims; a method of social control.
Teacher training class	1672 AD	Lyons, France	Father Demia	“First teacher training class on record was conducted by Father Demia.”
Simultaneous or class instruction	1684 AD (Ref.: 4, pp. 185, 223)	Rheims, France	St. Jean Baptists de Lasalle	“Pupils were divided into weakest, mediocre, and most capable group; and teaching of children in classes was practised.”
Normal school	1685 AD (Ref.: 19, pp. 136; 15, pp. 435)	Rheims, France	Abbe De Lasalle	“He established two more Seminaries for school masters in Paris. Practice teaching done under experienced teachers.”
School for girls	1686 AD (Ref.: 22, pp. 385)	St. Cyr	Mme. de Maintenon	The school became famous for the brilliance of its instruction. The liberal education, however, made the girls too witty, high spirited and worldly for the taste of the founder. and after 1692 the school was turned into a convent.
Religious freedom for teachers	1689 AD (Ref.: 25, pp. 188)	England	William and Mary of Orange	The position of the Church of England was now quite secure, so religious freedom was allowed to level off increasing protest, particularly from Puritan teachers.
Vocational education-trade school	1695 AD (Ref.: 19, pp. 188)	Halle, Germany	August Herman Francke	“Included wood-working and manual occupations. In 1707 Gemler opened a school for apprentices, teaching mathematics, and other subjects related to the trades.”

<b>Invention</b>	<b>When</b>	<b>Where</b>	<b>Who</b>	<b>Why</b>
Academic freedom	1698 AD (Ref.: 23, pp. 283)	Germany	Francke	This was done to allow freer teaching at a greater range of subjects and methods in teaching. Teachers were given a measure of protection against outside influence.
Compulsory attendance	1717 AD (Ref.: 2, pp. 84; 22, pp. 369)	Prussia	Frederick William I	“The work of France in the preceding century and the rapid development of the Pietistic schools led to the decrees of 1717 in which Frederick William I made attendance in the elementary schools of Prussia compulsory.” He founded 1700 schools to meet the needs of the poor.
Government construction of schools	1737 AD (Ref.: 25, pp. 357)	Prussia	Frederick William I	This was to further streamline and modernize education in Prussia.
State support of teachers	1737 AD (Ref.: 25, pp. 357)	Prussia	Frederick William I	To bring control of education (who taught what) under closer government control.
Monitorial system of teaching	1747 AD (Ref.: 22, pp. 16)	Paris, France		Use children as monitors or teacher assistants, and break the learning system down into the smallest steps so that one master could teach hundreds of students.
Adult education	1754 AD (Ref.: 19, pp. 119)	Wales	William Singleton and Samuel Fox	“To instruct working men and women.”
School for deaf- sign language	1760 AD (Ref.: 19, pp. 118)	Paris	Abbe de L’Epee	“Opened the first school for deaf.” The school was taken over by government in 1761. “He invented the sign language used by the deaf.”

<b>Invention</b>	<b>When</b>	<b>Where</b>	<b>Who</b>	<b>Why</b>
Public schools	1763 AD (Ref.: 2, pp. 60, 84; 20, pp. 243)	Prussia	Frederick the Great (Frederick William II)	“The spirit of nationalism swept through Europe late in the eighteenth century. Resourceful political leaders soon came to see education as a means for building a strong state... Prussia built a national system of free schools... These schools were supported and controlled by the state.”
State licensing of teachers	1763 AD (Ref.: 25, pp. 358)	Prussia	Frederick William II	This was done to improve the quality of education and was the beginning of full Prussian control of education.
State regulations of textbooks and curriculum	1763 AD (Ref.: 25, pp. 358)	Prussia	Frederick William II	This was done to improve the quality of education, regulate what was taught, and see that state interests in education were protected.
Chair of pedagogy	1779 AD (Ref.: 23, pp. 311)	Halle, Germany	Barron von Zecllitz	This was done to promote university study and pedagogy; the scope of education was widening.
Sunday schools	1780 AD (Ref.: 25, pp. 339)	Gloucester	Robert Raikes	Many children worked in factories six days a week; education was only possible on their “free” day, Sunday.
Infant schools	1781 AD (Ref.: 25, pp. 339)	Scotland	Robert Owen	This was education for young children (3-6 yrs.) whose parents worked all day in factories and others would receive no schooling.
School for blind	1784 AD (Ref.: 19, pp. 115)	Paris	Valentin	“L’Institution National des Jeunes... the first school for the blind in the world. Early support was philanthropic and charitable, but state aid has gradually replaced private funds.”

<b>Invention</b>	<b>When</b>	<b>Where</b>	<b>Who</b>	<b>Why</b>
Full state authority over all levels of education	1787 AD (Ref.: 25, pp. 357-358)	Prussia	Frederick William II	Education was tailored to meet the needs of the state under a ministry of education; to coordinate and supervise education.
Sense teaching	1800 AD (Ref.: 20, pp. 235)	Burgdorf	Pestalozzi	“His procedure, especially with younger children was to take them on walks through the gardens, the fields, or the woods.” In studying such things as trees and plants, he hoped children would accumulate sense data out of which right actions could be formed.
Government monopoly on secondary schools; church schools suppressed	1794 AD (Ref.: 25, pp. 352)	France	Napoleon I	To prepare the students of the wealthy (who could afford the fees) for entry into the civil service; a study of the classics and humanities.
Teachers college	1808 AD (Ref.: 25, pp. 353)	Paris	Napoleon I	To ensure teachers were well prepared to teach; and fill the needs of the secondary school system set up in 1802.
Technical schools	1810 AD (Ref.: 20, pp. 247)	University of Berlin	Government	“To meet the need for more advanced training in scientific fields, an number of schools were established, the most famous of which was the University of Berlin...”
Specialized school of engineering	1815 AD (Ref.: 25, pp. 351-352)	France	Government sponsored	Engineering was recognized as a learned profession which could contribute to the advancement of science.

<b>Invention</b>	<b>When</b>	<b>Where</b>	<b>Who</b>	<b>Why</b>
Graduate programs	1820 AD (Ref.: 20, pp. 247)	Europe America	Universities	“Graduate programs are developed by the universities to carry on specialization to still higher levels. A well-qualified graduate of one of the four-year programs could now engage in graduate study in a particular field of scientific inquiry.”
Psychological order of learning	1825 AD (Ref.: 23, pp. 323-326)	Switzerland	Pestalozzi	Learning can only progress insofar as the development of the mind has progressed. The suitability of any lesson is its potential to awaken the learner. This ‘order of learning’ increased the teacher’s awareness of the pupils potential.
Student government	1830 AD	Rugby, England	Thomas Arnold	Arnold entrusted government of the schools, as far as possible, to the older pupils. This was done to facilitate better pupil-teacher relationships.
Schools for cripples	1832 AD (Ref.: 19, pp. 116; 7, pp. 230)	Munich, Germany	Mr. Kurtz	“Made the first attempt to educate cripples in specially adapted schools.” “Mr. Kurtz’s plan was to give crippled children a specially good education and an opportunity to learn a trade to “earn a livelihood.””
Free primary schooling for poor children; under a state system of primary schools	1833 AD (Ref.: 25, pp. 354)	France	Guizot, Minister of Public Instruction	France already had an organized secondary school system; a primary level system was introduced to increase literacy and make better use of the secondary school system.

<b>Invention</b>	<b>When</b>	<b>Where</b>	<b>Who</b>	<b>Why</b>
School for feeble-minded-mental defective	1837 AD (Ref.: 6, pp. 276; 19, pp. 119)	France	Edouard Seguin	“This year 1837 when Seguin began his work, marks the real beginning of systematic rational training of mental defectives, which has gone without interruption from that day to this.” (NOTE: “The first school was opened at Salzburg, Austria, in 1816 but was closed in 1835 without having been much of a success.” Opened by Gotthard Guggenmoss.)
Kindergarten	1837 AD (Ref.: 15, pp. 515; 12, pp. 126-131)	Blankenburg, Germany	Froebel	“This was a school... which did not have preparation for later schooling as its chief purpose. The kindergarten was a place in which children could grow, develop, and learn in an entirely natural way.”
Formal steps in teaching-learning as apperception	1838 AD (date of first Normal School in America) (Ref.: 20, pp. 240, 245; 2, pp. 92)	Germany, America	Followers of Johann Frederick Herbart	“This five-step teaching process ultimately came to be very widely used in American elementary schools. Many of the earliest classes for teachers and virtually all the American normal schools were established to train teachers to use this or a similar methodology.”
Division of school day	1840 AD (Ref.: 20, pp. 249)	America, Germany	Followers of Johann Frederick Herbart	Importance placed on the five-step lesson of teaching pattern “brought about the division of the school day into a series of teaching periods. Each period was given over to the teaching of a particular subject matter.” The length of the periods depended on “subject matter and the age of the pupils.”

<b>Invention</b>	<b>When</b>	<b>Where</b>	<b>Who</b>	<b>Why</b>
First notable education tests	1845 AD (Ref.:5, pp. 22)	Boston	Boston Schools	“Instituted... as substitutes for oral tests when enrolments became so large that the school committee could no longer examine all pupils orally.”
Apprentice system of teacher training	1846 AD (Ref.:25, pp. 320)	England	Voluntary Societies	Large numbers of pupils had made individualized instruction impractical; apprentice teachers were one attempt to solve this problem.”
A government “department of education”	1856 AD (Ref.: 25, pp. 342)	England	James Kay-Shuttleworth	This department examined where why, and how government funds were being spent on education; it systematized such spending.
Kindergarten for blind	1861 AD (Ref.: 19, 116)	Moritzbura, Germany	Voluntary Society	Special care was needed for the caring of blind children in their early years; the Moritzburg kindergarten attempted to meet this need.
Land grant colleges	1862 AD (Ref.:23, pp. 280)	USA	Congress, at the urging of John Turner	Land was granted by congress for the setting up of colleges to study agriculture and the mechanical arts, particularly mining. This was done to keep agriculture and the mechanical arts abreast of modern developments.
Scheme for selecting curriculum	After 1862 (Ref.: 23, pp. 280)	New York	Spencer	“The answer to the question of what subject matter should be taught is found in its usefulness... Spencer’s line of thinking quickly gained influence among the new schools.”

<b>Invention</b>	<b>When</b>	<b>Where</b>	<b>Who</b>	<b>Why</b>
First objective education tests- objective measures of achievement	1864 AD (Ref.: 5, pp. 22)	England	Reverend George Fisher	His “scale books, used in the Greenwich Hospital School... provided means for evaluating accomplishments in handwriting , spelling, mathematics, grammar and composition, and several other subjects. Specimens of pupil work were compared with ‘standard specimens’ .”
Manual training	1866 AD (Ref.: 23, pp. 145)	Finland	Uno Cygneaus	It was developed as a more efficient means of training personnel for a <u>specific</u> function.
Teacher’s union	1870 AD (Ref.: 22, pp. 293)	England	National Union of Elementary Teachers	The first effective national non-denominational teacher’s organization.
School boards- districts	1870 AD (Ref. 25, pp. 343)	England	Gladstone, Liberal Party	Elementary education was now established as a social right of all children whether or not their parents could pay. School boards were established to administer elementary education at a local level.
Correspondence course	1871 AD (Ref.: 24, Vol. 26, pp. 49)	Chautau- gua, New York	Methodists	It was realized not everyone could go to a place of instruction, hence some Methodists resolved this problem by correspondence instruction. Business and commercial schools were quick to make use of the invention.
Mental tests- forerunners of IQ	1895 AD (Ref.: 2, pp. 138; 5, pp. 23, 24)	France	Binet and Henri	“Binet and Henri described tests of memory, imagination, attention, comprehension, suggestibility, and aesthetic appreciation that were forerunners of the Binet-Simon scales of the twentieth century.”

<b>Invention</b>	<b>When</b>	<b>Where</b>	<b>Who</b>	<b>Why</b>
Experimental schools	1896 AD (Ref.:23, pp. 400)	Chicago	Dewey	Called the 'University Laboratory School' it was established to develop a model school by experimentation with different educational and instructional methods.
Project method of learning	1896 AD (Ref.: 23, pp. 401)	Chicago	Dewey	Students were given raw materials and encouraged to learn through 'projects' which stressed 'self-education'. This invention enabled the teacher to spend more time with individuals who could progress on their own.
Municipal control of elementary and secondary education	1902 AD (Balfour Act) (Ref.: 25, pp. 373-374)	England	Conservative Party	The Tories felt pressured by the economic and social burdens of state secular schools. As well, there was growing demand from the municipalities for a greater say in educational affairs.
Individual intelligence test	1905 AD (Ref.:8, pp. 43)	France	Binet and Simon	"Binet and Simon brought out the first intelligence scale in 1905, devising it primarily for the purpose of selecting mentally retarded pupils who required special instruction."
Montessori schools-house of childhood	6 <sup>th</sup> January 1907 AD (Ref.:16, pp. 281-282; 13, pp. 56, 43)	Rome	Marita Montessori	
Standardized achievement test	1908 AD (Ref.: 8, pp. 45-46)	New York	Stone	"Stone, a student of Thorndike's published his arithmetic reasoning test, the first standardized instrument to make it's appearance."
Junior high school	1909 AD (Ref.: 19, pp. 95)	Berkley	Educators	"The aim was to hold more pupils in school and to make vocational provisions for those going to work."

<b>Invention</b>	<b>When</b>	<b>Where</b>	<b>Who</b>	<b>Why</b>
Guidance counsellor-teacher	1909 AD (Ref.: 20, pp. 278; 4, pp. 684)	Boston	Dr. Frank Parsons	“As differentiated curricula were introduced to prepare students for specific adult callings, it became increasingly necessary to help each pupil to find the particular program best suited to his needs.”
Junior college	1910 AD (Ref.: 19, pp. 96)	Fresno, California	California Legislature (Law passed 1907)	“ Great increase of students desiring and deserving education beyond the high school. Overcrowding of many colleges Need for better instruction in early college grades. Demand for facilities of higher education nearer home. Changing conceptions of the functions of secondary and collegiate education.”
Informal objective examination	1920 AD (Ref.: 8, pp. 47-48)	Chicago	McCall	“First suggested that teachers did not need to depend solely upon standardized tests but that they could construct their own objective tests for classroom use.”
Unit system - unit of work -teaching unit-fused courses	After WWI (Ref.: 20, pp. 250)	America	Curriculum Makers	“The work of each day within a given subject matter area is related to the central topic of the unit as a whole and, through the topic unit... When correction is attempted between subjects... the educators... speak of correlated units, cooperative units, and fused courses.
Modified programs -for slow learner and gifted	After WWI (Ref.: 20, pp. 277, 298)	America	Research workers	Because of the research into the differences in individual performances, “modified programs of study... were developed for the slow learner, just as programs... were provided for gifted.”

<b>Invention</b>	<b>When</b>	<b>Where</b>	<b>Who</b>	<b>Why</b>
Real life needs	Before WWI (Ref.: 20, pp. 276)	America	Curriculum	“Attention was therefore focussed upon real-life needs of pupils and the stimuli isolated for presentation in the classroom came more and more to be those which are encountered outside the school.”
‘Child-activity programs	1945 AD (Ref.: 25, pp. 400)	France	State Schools	Instituted in French secondary schools these ‘activity programs’ paid special attention to the growth and development of the child. By freeing the child from rigidly structured programs, it was hoped the child’s creative talents and ability would be better able to surface.
Teacher aides	1953 AD (Ref.: 14, pp. 64)	Bay City, Michigan	Charles B. Park	“Casting about for any way out of the dilemma of having too few teachers and too few classrooms to handle his growing school enrollment, he decided... Bay City would bring non-professional local people into schools... to take over the overburdened teacher’s routine work.”
Abolition of racially segregated schools	1954 AD (May 17) (Ref.: 25, pp. 459)	Washington DC	Supreme Court	“Segregation... in and of itself produced inequality the doctrine of ‘separate but equal’ was overturned and education in America moved forward for all citizens.”
Intern teaching	1952 AD (Ref.:14, pp. 162-163)	Harvard	Graduate School of Education	“Purpose of the plan- to stimulate outstanding liberal arts graduates to enter the teaching profession.:They began teaching immediately under the supervision of the master teachers.”

<b>Invention</b>	<b>When</b>	<b>Where</b>	<b>Who</b>	<b>Why</b>
Television in class-room - teaching through television	1956 AD (Ref.: 14, pp. 81)	Washington County Md	School Administrators, Teachers	“The adoption of closed circuit television occurred eight long years after Washington County school administrators and teachers began to re-examine and revise curriculum.”
TV college	1956 AD (Ref.: 26, pp. 3)	Chicago	Chicago Board of Education	Credited college courses were offered on open circuit TV without compromising course objectives or quality. It made accredited college more accessible to the public and helped alleviate the ‘crowded class-room’ problem that universities experience.
Programmed instruction - teaching machines	1957 AD (Ref.: 11, pp. 652)	Harvard University	B. F. Skinner	“Programming was first employed on a regular basis in 1957 at Harvard University as a part of B. F. Skinner’s ‘The Analysis of Behaviour’, a course designed to teach many of the behavioural principles on which programmed instruction is founded. (NOTE: First teaching machines developed in 1915 at Ohio State University by Pressey, though were not used until after Skinner began experiments. (Ref.: 17, pp.1018))
Team teaching	1957 AD (Ref.: 11, pp. 12-13, 20)	Franklin School, Lexington, Mass.	Harvard Graduate School of Education	“The Lexington experiment stems in part from a proposal made to the Fund for the Advancement of Education in April, 1956 by Dean Francis Keppel of Harvard’s Graduate School of Education. It is a relentlessly analytical look at some of the inadequacies of American education.”

<b>Invention</b>	<b>When</b>	<b>Where</b>	<b>Who</b>	<b>Why</b>
Total upgraded primary school system	1957 AD (Ref.: 14, pp. 40)	Appleton, Wisconsin	Teachers	As a result of dissatisfaction with the graded system, the upgraded system was considered in 1951. That September it was brought into one school with first year students. Next year it was extended to the “beginning primary students at all schools. In 1957-58 the program was adopted throughout the elementary schools.”
Computerized education	1960 AD (Ref.: 1, pp. 201; 18. pp. 196-8)	University of Illinois	Researchers Coordinated Science Laboratory	“In considering various possible automatic teaching devices, it seemed clear from the outset that the greatest promise lay in the idea of an automatic teaching system organized around a large, high-speed, general purpose digital computer...”
Open admissions; ie, anyone could take courses, regardless of educational background.	1969 AD (Ref.:D.G. Hawkrig e Institute of Educational Technology, The Open University England)	London, England	Open University	The open university ‘teaches at a distance’ by using printed texts sent by mail, radio, and television broadcasts. As well, regional study-resource centres were set up. The student could proceed at his own pace; this innovation made education available to large numbers of people who otherwise would not have the chance to proceed further in their education.
Rural family development project (rfd)	1969 AD	Wisconsin, USA	University of Wisconsin Extension Division	RFD was a project aimed at rural adult basic education through the use of radio and television; it was a home study program designed to meet basic needs, ex. “how to cook inexpensive and nutritious meals.”

Invention	When	Where	Who	Why
'Racial balancing' of class-rooms	1969 AD (Ref.: 25, pp. 461)	USA	Supreme Court	Bussing of children to schools was one method used in attempting to desegregate US schools. It assured that black and white children in America attended the same schools and received the same instruction.

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