teaching

The guiding of learners is an activity as old as human society and a crucial means of conveying not only information but also the methods for finding and managing it from one generation to the next. Teaching is connected to information in a basic and general sense, as teachers are intermediaries between selected information and those who need to use it, though teaching may also involve the imaginative faculties. We distinguish between formal and nonformal education to describe instruction and learning. In this usage, formal and nonformal education are connected to educational institutions and teachers, along with a third type, so-called informal learning, in which everyone and everything can be perceived as a teacher. This entry is about teaching in the formal and nonformal senses only. (To read more about informal learning, see the entry LEARNING.)

As defined by UNESCO (2012), both formal and nonformal education are "institutionalized and intentional." Both "respond to requirements and standards that are set by national or sub-national educational authorities." Formal education is usually "initial [comes first] and presents programs recognized by the relevant national educational authorities." The defining characteristic of nonformal education is that it is an addition, alternative, or complement to formal education "within the process of the lifelong learning of individuals." It "caters to people of all ages, but does not necessarily apply a continuous pathway-structure; it may be short in duration and/or low intensity, and it is typically provided in the form of short courses, workshops or seminars." Nonformal education mostly leads to "qualifications that are not recognized as formal qualifications by the relevant national educational authorities or to no qualifications at all." Formal education, for example, includes K–12 and higher education,

whereas nonformal education encompasses learning opportunities in many media, including online courses.

Teaching in formal and nonformal education provides information to students that educational authorities deem worthy of exercising and memorizing. It includes guided mastery of predefined ways of rationalizing and arguing, and also the transmission of traditions and technical know-how from one generation to the next. Students might use these pools of information to build up new ideas and experiments, and thus form part of technical innovation, but there is also the possibility that they might primarily learn to live like their ancestors. The Chinese imperial examination system is an example of a national regulated system of tests that shaped what people strove to learn (mainly the mastery of the Confucian classics). This examination system selected candidates for the state administration, starting around 681 CE in the mid-Tang dynasty. It was abandoned in 1905 as archaic, ending Confucianism as an official state ideology. The exams had constituted the value system of all Chinese local elites, because most of them had learned for and committed to the values presented in the exams.

Another way to look at teaching from generation to generation is to explore reciprocity, by examining parenting. In her book *Growing Each Other Up: When Our Children Become Our Teachers* (2016), Sara Lawrence-Lightfoot highlights the shifting dynamics of authority in the postmillennial years, which brought new ways of learning interaction between children and their parents. One example is the balance of emotional closeness and distance that parents learn while interacting with their children; another lies in the challenges of dealing with different identities, such as when a mother is taught patiently by her autistic son about his abilities, feelings, and desires, or a father is mentored by his lesbian daughter.

In its ideal form, teaching in both formal and nonformal education is based on one or

more methods, which make it easier for students to understand very difficult and closed contents. The long-standing discipline of didactics studies these methods and their contexts and applications. Methods include cutting content to its roots, starting with memorizing simple statements and vocabulary, often in visual and categorically or associatively organized forms; solving single-track problems; and ending with more complex contexts and arguments. In many formal and nonformal contexts, these steps are marked by exams, grades, and promotions to the next level. The *Jesuits, or Society of Jesus, a Catholic order originating in Spain, were early advocates of a regulated school system of grades and promotions in the Western world. Between 1551 and the official abrogation of the order in 1773, the Jesuits built a network of schools in Europe, the Americas, Japan, and China. The Ratio Studiorum, with its system of grading and testing, had been the authoritative guide to Jesuit education worldwide since 1599.

While teaching programs ending with grades and exams are applied in most formal educational contexts, they are not necessarily part of nonformal education. Martial arts training is one context that brought nonprofessional sports coaching (which is by definition an add-on and informal training for almost all age groups) to a level with formal education by introducing national regulations. Exams determine the belt color that a student wears as part of the sports uniform: the color represents the level of mastery the student has reached. When students reach the grade of the black belt, they are qualified to teach less skilled pupils.

Other sports have equally differentiated systems of achievement. German horseback riding training provides exams and promotion from level 10 (which informs and tests the most general way of keeping and treating of horses) to level 1 (which tests the internationally most difficult performance level of riders in dressage or jumping). The tests of skills and knowledge, practical and theoretical, and the preparatory textbooks are nationally standardized and lead to

certificates. The upper levels serve as an entrance phase for those who want to become professionals: they will do additional training and tests. The upper levels are connected directly to the international standards of the disciplines of dressage and jumping and are aligned with the skills needed to compete internationally. Some of the nonformal education fields such as the martial arts training and the German horseback riding teaching system are highly regulated and come very close to formal education.

Nonformal education often happened where the unwritten traditions of society had been stable over centuries, relying more on tacit knowledge than in nontraditional societies. In *early modern Habsburg Austria, youth took residence at a court of a related aristocratic family, where they learned manners, dress, and sports so as to perpetuate distinctions between themselves and the lower classes. Communities that experienced the disruption or suppression of values by governments also used forms of education outside the official classroom, such as in communities in exile, or among disadvantaged genders. Communities in diaspora, like the Jews and Muslims after their expulsion from Spain in 1492, offer prime examples of ancestral traditions maintained in the home, sometimes with a diminishing understanding of their origins. The transmission of information was perforce clandestine and oral instead of written out or published. With this lack of written record, the information cannot be easily recovered or reconstructed by outsiders, because it is not visibly stored or archived. Finally, poor or remote parts of society do not always have access to schools and therefore have developed and used alternative forms of teaching and learning.

Teaching within Institutions in Early Modern Times

In the context of late medieval Christian Europe, the learned were also the professional elite of a town, serving the government and aristocracy (as the powerful owners of landed property).

Belonging to this service elite opened up a career path facilitated by the standing of the learner's family, and by the access to schools and higher learning in society. The body of educational institutions was manifold, built up either by the church, with branches in cathedral schools and monastery schools, elementary education, and universities; or by the town, with apprenticeship systems of town *guilds, and secular merchant schools, and after the *Reformation increase numbers of town-managed higher education. After elementary school, higher education targeted boys from fourteen years onward. Girls usually did not participate in higher education or trade school, but households did train them privately, provided interest and money were available.

European ideals of education developed from the ancient Roman notion of the "seven *liberal arts" comprising the trivium of disciplines of the word (grammar, logic, rhetoric), and the quadrivium, the four disciplines of the number (arithmetic, geometry, astronomy, music). At universities (which developed across Europe after the first foundations of Bologna and Oxford in the late twelfth century), students spent three years in the Faculty of Arts studying advanced curricula of the seven liberal arts and philosophy (principally the four branches of logic, ethics, physics, and metaphysics). They could then enter one of the three higher faculties devoted to law, medicine, or theology (often called the queen of the disciplines). This system weathered changes in the material being taught—from *scholastic emphases of the medieval period to humanist ones starting in the sixteenth century and the new sciences introduced in the late seventeenth century. In the nineteenth and twentieth centuries, European universities centered on research, shaping the modern *research university. The most influential university models in the nineteenth century were the Humboldtian (German) style to focus on philosophy as a core subject and leave the students free and alone to start thinking methodically and creatively, and the French model, centering on the sciences of the Polytechnic with strict discipline and

examination.

In medieval and early modern Islamic societies, the centers of learning were Quran schools for the young, and madrasas for the higher education, both geared toward boys. Girls usually did not participate in formal education, but many of them were trained with private teachers at home. Madrasas were buildings supported by the ruling classes, not communities like the European universities; their origins go back to the ninth century, they flourished in the eleventh to fourteenth centuries, and their science had great impact on European thought in all disciplines, from philosophy, mathematics, and astronomy to law and theology to medicine.

Damascus in 1517 had about 130 madrasas and about ten thousand inhabitants. By contrast Basel had only one university; and Zurich, with about five thousand inhabitants, had no institute of higher education. The schools of Damascus were generally smaller than universities in Europe, and they included fewer teachers, teaching not only one, but more subjects than in Europe. For example, one teacher would teach law, physics, and theology at the same level. The Islamic school masters competed against each other, so that there were different schools of Islamic *exegesis typically in one place, each giving out their own certificates or *ijazas*, which authorized their students to become teachers in turn.

When the Ottoman Empire disintegrated, the madrasas reacted with a stricter religious schooling. Studies in religion, literature, and Arabic language dominated the curriculum, and teaching consisted mainly of reiterating past knowledge as the authority. In this environment, reforms of Islamic education happened on a national basis. Egypt, for example, embraced Western models of scientific education in the late twentieth century and placed religious education in schools on a secondary footing, with, in 2003, three hours a week spent on religious studies of thirty hours per week in total.

Teaching That Is Hard to Track

Education outside the institutions, such as with tutors or through parents, is harder to track, and we often know about it through personal archives, or by reading court trial records against the grain. Documents about content and the daily how-to of education are scarce, especially where the transmission of knowledge or information was orally or physically administered. We know about healers, for example, mostly because of their conflicts with the law, when they were accused of heresy and brought in front of the law court, because we have the trial documents. Only from the details of these law court documents can we infer how the next generation of healers might have been trained, by word of mouth.

In medieval and early modern times, the experience of diaspora and exile provided a challenge to those concerned in setting and adjusting goals for achievement and teaching. Religious exiles link together the experiences of Muslims, Jews, and Christians of many confessions. Exile communities developed three main strategies: tactics of inclusion to fit into the new environments, often connected with learning a new language; programs to restore their religious and social identities, connected with teaching traditional lore, or in extreme cases teaching the students to become martyrs; and finally, methods of coping with the new realities, for example dealing with poverty. Teaching plans and institutions followed each of the three directions. Jan Amos Komenský (or Comenius, as he Latinized his name) (1592–1670) had educational ideas that were born out of religious exile. He revolutionized the way to think about education, by formulating a comprehensive philosophy to contextualize and rationalize his goal to teach everything to everybody. He called it *Pansophia*, all-knowledge. As a side product in 1658 he published a textbook for children—*Orbis Sensualium Pictus* (World of the senses in pictures)—that contained diagrammatic pictures on every page explaining daily life and work to

young children. By naming the objects and situations drawn out in the pictures, he built up their vocabulary simultaneously (and playfully) in many languages.

A Sign of Modernity: Compulsory Education

Traditional societies, such as many indigenous cultures in the nineteenth and twentieth centuries, continued to rely on unwritten or tacit approaches to teach most or all of their children in an unregulated way. But at the same time modern industrialized societies introduced compulsory attendance at schools for pupils up to a certain grade or age, related to the extent of local or territorial government control. With origins in different regions of Europe, more comprehensive laws for both genders came into place after the Reformation; so in 1592 a compulsory school law was introduced for both sexes by the German duchy Palatinate-Zweibrücken. Scotland followed in 1616 with the School Establishing Act, which demanded that schools in every parish of Scotland be established to educate everyone. The parishioners were to pay for them and the Church bishops to supervise classes and curriculum (thus leaving decisions about the size and levels of the school to the parish); and in 1647, Massachusetts passed the first compulsory schooling law in America, geared toward a comprehensive system of schools, not individual attendance of pupils. Prussia is usually cited as instituting the first modern compulsory education system in the years 1763–65, when Frederick the Great signed the decree known as the "Generallandschulreglement." Girls and boys were to go to school from age five to age thirteen or fourteen. By 2018, a large number of the world's nations had adopted the system of compulsory education. Entry age was usually about six years, and exit age varied from eleven (Haiti) to eighteen years in Turkey, Israel, Poland, and Mexico and other industrialized countries. In the United States, the ages varied in 2018 between states, with an entry age of five to seven and an exit age of sixteen to eighteen years. Such requirements have sometimes been met with

resistance. The home schooling movement in the United States is one sign of opposition to the mandatory requirements of government.

Teaching Methods

Teaching methods based on memorization including visualization of objects and processes, and interactive performance (by participation and by audit), are as old as teaching itself. Some methods focus on drill and on the teacher's role as the focal figure for a group of students, sometimes (as in the Oxford and Cambridge tutorial method) even using a teacher-student ratio of 1:3 to 1:1. Some methods need a peer group, especially methods concerned with emotional intelligence and morals; others, such as many experimental methods, use feedback directly from the outcome of the students' quest: did the water turn pink when they mixed in the solution? If yes, follow up with the next chemical exercise; if no, go back to the start. In the computer age, algorithms are able to take over parts of the teacher's role to assign and grade or give feedback to exercises that individual students or groups of students take within specific computer programs, and to customize the schedule so it fits to the analyzed needs of the student. The *internet educational organization Khan Academy, named after its founder Salman Khan, uses one of these algorithms for courses in mathematics and a wide range of fields. Students who sign up repeat easy exercises in the subject they want to learn until they can solve them without thinking, and the program decides according to the results what exercise the student should do next. Without reading theory, the student thus learns immediately like a child in trial-and-error manner, one step at a time.

Goals and Values

Goals and values guided the standards for education. Earlier goals of compulsory education were

teaching essential skills for the industrialized society; giving youth social skills and moral values; and bringing "outsiders" into a mold, such as immigrant children, to fit into their new environment. With new considerations of diversity in the age of internet society, providing a melting pot to shape and reeducate all citizens toward similar morals and values seemed unnecessarily restrictive. But to allow students to reject restrictive state regulations, and therefore weaken compulsory education, has the downside that the governmental support for poor families to send their children to school would diminish if regulations were cut.

With new goals of globalization and diversity in mind, as suggested by the information age, the floor would be open to discuss teaching methods and offer gains of knowledge and skills from a standpoint outside the national school system. The new communication skills of computer coding and internet *literacy are valid globally, as is internet etiquette as a basic moral *code, and call for standardized programs worldwide. The challenge remains to connect international learning programs with nationally or regionally controlled funds and access policy.

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See also ALGORITHMS; ART OF MEMORY; DIAGRAMS; DIGITIZATION; EXCERPTING/COMMONPLACING; GLOBALIZATION; LEARNING; MANUALS; MEDIA; PROFESSORS; REFERENCE BOOKS; STORAGE AND SEARCH

Further Reading

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Our Children Become Our Teachers, 2016; Karin J. MacHardy, "Cultural Capital, Family Strategy and Noble Identity in Early Modern Habsburg Austria 1579–1620," *Past and Present* 163 (1999): 36–75; Ebrahim Moosa, *What Is a Madrasa?*, 2015; Timothy Reagan, *Non-Western Educational Traditions: Local Approaches to Thought and Practice*, 4th ed., 2018.