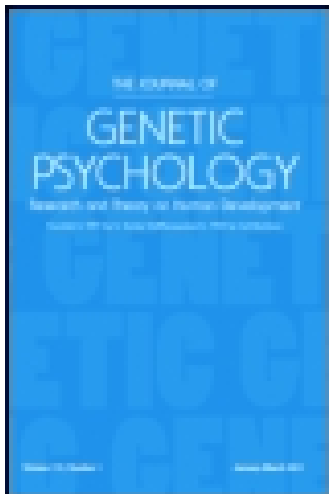


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Publisher: Routledge

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The Pedagogical Seminary

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/vzps20>

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Published online: 28 Aug 2012.

To cite this article: Jefferson R. Potter A. M (1891) History of Methods of Instruction in Geography, The Pedagogical Seminary, 1:3, 415-424, DOI: [10.1080/08919402.1891.10533943](https://doi.org/10.1080/08919402.1891.10533943)

To link to this article: <http://dx.doi.org/10.1080/08919402.1891.10533943>

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inations of the Teachers' Training Syndicate. The number of students is about 50; in ten years 211 have obtained full certificates. *The Cambridge Training College* provides professional training for many young women who have passed through Newnham College and other colleges for the university education of women. In addition to the two special colleges for the training of mistresses for secondary schools, five other institutions had, in 1889, grafted such professional training upon their other work.

The training of teachers of science and art is provided for by the Department of Science and Art, under whose charge are the National Art Training School with 39 students in 1889, and the Normal School of Science and Royal School of Mines with 284 students. Grants are made by the Department to Training Colleges and to University Colleges which have science classes for teachers.

A Kindergarten Training School was established at Stockwell in 1874 by the British and Foreign School Society. Other colleges, notably Maria Grey and Saffron Waldon, train Kindergarten teachers. Examinations for teachers' certificates are conducted by the Froebel Society.

HISTORY OF METHODS OF INSTRUCTION IN GEOGRAPHY.

BY JEFFERSON R. POTTER, A. M.

The foundation of geography was laid in antiquity. In Homer and Hesiod we find mythical geography; in Herodotus, general geographical descriptions and the demonstration of the influence of the physical peculiarities of each country on changes and events. To Anaximander is attributed the discovery of the obliquity of the ecliptic, the use of the gnomon to determine the solstices and equinoxes, and the invention of geographical maps; and to Pythias is ascribed the connecting of astronomy with geography. Eratosthenes produced the first scientific treatise on geography, measured the obliquity of the ecliptic,¹ determined the circumference of the earth,² and established a first parallel and prime meridian. Strabo³ appears to be the first who conceived a complete geographical "treatise as comprising the four divisions of mathematical, physical, political and historical geography."

In his *Natural History* Pliny⁴ the elder gave a sketch of geography. "*Cogor et e tabula pictos cognoscere mundos*,"

¹ His result $23^{\circ} 21' 20''$.

² His result 252,000 stadia, according to Pliny 31,500 Roman miles, about 25,000 Eng. miles.

³ Encyc. Brit. Vol. 22, p. 581.

⁴ About 70 A. D.

from Propertius, shows that this science had a place in the schools of antiquity. The scientific development of geography in antiquity was completed by Ptolemy,¹ who first attempted to put the study on a strictly scientific basis, and furnished the standard text-book till the great maritime discoveries of the fifteenth century.

In the Middle Ages military and commercial enterprise enlarged the knowledge of the surface of the earth. Arab travellers and astronomers made valuable contributions. The Trivium and Quadrivium had no place for geography, yet Roger Bacon, Albertus Magnus and Vincenz von Beauvais vigorously advanced the science.² The Borgia map, a bronze planisphere, shows the knowledge at the beginning of the fifteenth century. Scientific research, extinguished by the fall of the Roman empire, was first revived in the study of geography as a result of the travels of Marco Polo. Prince Henry of Portugal fostered cartography. Fine maps were produced at Venice. The discoveries of Columbus and Vasco da Gama, and the Copernican system, aroused great interest, especially among the Germans, as is shown by the cosmographies of Peter Apianus, Franck, and Münster, by the growing influence of German map-makers, and by the numerous itineraries and topographies. At this period begins geographical instruction in the German schools.

The great reformers of the sixteenth century demanded a broader course of study. Although Sturm and Trotzendorf ignored geography, Michael Neander published two manuals, broke away from antiquity and gave the recent developments of nations. The Jesuits neglected geography. In the charity school connected with the orphan asylum established by George I. of Hesse-Darmstadt, about 1590, we find the first trace of instruction in this subject in the "*Volksschule*," consisting of reading cosmography on certain days.

In the seventeenth century Galileo gave the telescope, Kepler demonstrated the elliptical form of planetary orbits, Bacon presented the principles of the inductive method, Amos Comenius carried these principles into the service of the school, demanded actual observation and study of things, provided in his *Didactica Magna* for teaching the fundamental ideas of geography at the home in the "Maternal School," for general geography and the native land in the "Vernacular School," and for maps and astronomy in the Gymnasium. John Locke regarded this subject as a science of observation, and urged the use of globes and maps. While such apparatus came into use, the instruction was very poor.

¹ His system was composed about 150 A. D.

² See especially for the history here and in what follows Geistbeck, in Kehr's *Geschichte d. Methodik*.

In the first half of the eighteenth century advance was made through Francke, the chief representative of the Pietists. Palestine, and Germany received most attention. The instruction was given mostly in the manner of play outside of school hours, by excursions and by visiting shops, in making collections, etc.,¹ and was based on the principle, "*Non multa sed multum.*" Geography was placed in the position of an independent science rather than as appendage to other sciences, especially history, as before that time. The methods of the Paedagogium at Halle furnished a standard for most schools of northern Germany.² Joseph Hübner treated the subject from an historical and statistical point of view, with questions and answers, and neglected physical geography. He arranged his materials without regard to natural relations, and concluded with the elements of mathematical geography, in which he opposed the Copernican system.

Geography was introduced into the high school at Edinburgh in 1715, and gradually into the other schools of Scotland with the use of globes and maps;³ into the Prussian schools in 1763, by decree of Frederick II; into the course at Würzburg in 1774; and into the Principality of Fulda in 1775.

In Émile, Rousseau demanded things rather than representations; and caused a pedagogical revolution near the close of the eighteenth century. "For Émile, the first two points in geography shall be the city where he lives and the country-residence of his father; then the intermediate places; next the rivers in the vicinity. . . . Let him make a map of all this for himself."⁴ The philanthropists assimilated and systematized Rousseau's principles. Salzmann⁵ (1744-1811), emphasized "Heimatskunde" as the condition of intelligent study of other countries; Schütze demanded the synthetic course, gradual advance at first, the use of maps, globe and planisphere, the drawing of the boundaries of countries free-hand, and the geographical play hour; Johann Christoph Gatterer aimed at the systematic arrangement of the facts, according to natural relations, and was the forerunner of comparative geography; Herder⁶ (1744-1803), regarded geography "as the basis and auxiliary science of all studies which we most prize and value." "In short, geography is the basis of history, and history is nothing but geography of times and peoples in motion." He emphasized physical geography, the

¹ Lindner: Handbuch der Erziehungskunde, p. 285.

² Richard Trampler: Die Constructive Methode.

³ James Grant: History of the Burgh Schools in Scotland, p. 395.

⁴ Émile, Book III.

⁵ Lindner: Handbuch der Erziehungskunde, p. 766.

⁶ John B. Dalsh: The Study of Geography, Education, January, 1888.

causal relation of the different factors, the influence of nature on man, and the conquests of man over nature. "Charge geography with aridity!" says he, "we might as well charge the ocean with dryness." Gaspari laid stress on historical geography, and first presented different courses of study. His work on methods of instruction, published in 1791, passed through many editions and was widely read.

The "Kinderfreund" of Rochow (1734-1805), had a great influence in introducing this study into the "Volksschule," treated of the elements of the science and the use of the globe, and furnished geographical parts for reading two hours each week. Similar works appeared; attention was given to geography in the primary schools; and gradually the gymnasium introduced this study. The principles of Rousseau were rarely applied. The analytical method is found in Wilmsen's "Kinderfreund."

In the nineteenth century, Pestalozzi (1746-1827) recommends the synthetic course, and the method of beginning with the child's immediate surroundings in observing the little tract of country where he lived, not upon the map, but upon the very soil, in order to prepare the way for a comprehensive view of the history of the earth and man and their mutual influence. His maxim, "The absolute basis of all knowledge is observation," was often opposed by his practice in teaching. The realization of his ideas came in great part through his pupils, especially Tobler and Henning. The book of Henning in a series of parts treats of the geography of the home, of the divisions of land and water, meteorology and climate, minerals, plants and animals and man, the political institutions and the elementary ideas of astronomical geography; then he gives the general topical geography divided into physical and political. He regards synthesis as the natural course, emphasizes the physical factors, seeks to trace the influence of nature upon the development of man, urges the comprehension of everything in its reciprocal action and insists on the self-activity of the pupil. The chief merits of the work of the followers of Pestalozzi are the comprehensive study of the home and its surroundings, the placing of the physical factor in the foreground, the emphasis upon the causal connection between geographical factors and the arousing of self-activity in the pupil.

Karl Ritter regarded the earth as the home of man, and aimed to convert knowledge derived from the most unlike sources into organic unity, to give a vivid view of a country as a whole, its natural and artificial products and of the world of man and nature, in order to show their reciprocal relations. "The land affects the inhabitants," says he,

"and the inhabitants change the land, hence physical geography is the basis of geography." The materials for new paths were furnished first at Ritter's time in the foundation of geology and oceanography, in the determination of the laws of terrestrial magnetism, the pressure of the atmosphere and its hydrographic phenomena, the laws of the currents of air, in the outlines of plant and animal geography, etc. His creative work was made possible by Humboldt, who sketched the first profile section of a country and made important maps, was the founder of comparative orography, laid the foundation of plant geography by his mathematical and hysometric determinations, gave by his map of Central Asia a completely new form to the relief of the great continent in accordance with principles retained to the present day, opened the way to the science of volcanoes, and a deeper penetration into the phenomena of terrestrial magnetism, established isotherms to furnish light on the field of meteorology, and whose genius was exercised upon almost all fields, almost everywhere produced new sciences, new methods and new sources of geographical knowledge. Ritter published two works on method, favored the synthetic course, map-drawing and the constant use of maps, urged the use of numbers in measurement and comparison of measurements to develop in the pupil ideas of distances, heights and areas, and required self-activity. Thus Ritter was the founder of modern geography. Some of his ideas were expressed before, but he first made them vital. The title of his chief work consisting of nineteen volumes gives the key to his geographical teaching, "Geography in Relation to Nature and to the History of Man" ("Die Erdkunde im Verhältniss zur Natur und Geschichte des Menschen.") From 1820 till his death he was Professor of Geography at the University and Military Academy in Berlin.

Peschel laid emphatic stress upon the value of number relations, and upon making the map the center of instruction. "Let the teacher," says he, "seek wholly to dispense with the book, to depend only upon the map and to lead the pupils to discover from the map the characteristic features of the nature of a country."

Recent discussions relate to the order of geographical stages of instruction, means of teaching by observation, and map-drawing.

METHODS.

The so-called analytical method begins with the general relations of the earth as a heavenly body and ends with the home;¹ proceeds from the whole to the parts;² "takes up

¹ Kehr: *Die Praxis der Volksschule*, p. 319.

² Lindner; *Handbuch der Erziehungskunde*, p. 313.

the attributes of the earth and its several parts (one by one) in logical succession, pointing out the causal connection between them deals with the earth as a whole, so that all the details afterward learnt may fit into their right places and be always understood to be parts of a whole."¹ It is strictly systematic and bears a scientific stamp, but it necessarily assumes the most general and important geographical conceptions and consequently is adapted to schools of high grade.² As stated in the directions to the Royal Cadet Corps, "this mode of treatment pre-supposes some familiarity with phenomena, some mathematical and physical notions, and a somewhat matured understanding."³ As supporters of this method may be mentioned, among educators, Guts Muths, Niemeyer, Gräfe and Waitz; among authors of text-books, Berghaus, Roon and Cannabich.

It is favored by most writers on method, is adopted in the course of most text-books,⁴ and is the established method in most schools of high grade.⁵ In its application A. Kirchoff's *Schulgeographie*, "Sydow-Wagner's *Methodischer Schulatlas*," Adolf Mang's "Universal-Apparat" and "Tellurium-Lunarium"; the globe of A. Brix, the black globe, Hirt's "Bildertafeln" and Hölzel's "Geographische Charakterbilder" furnish the equipment for thorough and successful work in the hands of a skilled teacher.

The "synthetic method"⁶ begins with a single portion of the earth, adds the other parts, and finally unites them into one whole; it imparts the necessary preliminary geographical notions; it constantly uses the knowledge gained in the locality already considered in illustrating the unknown in the localities to be studied. The usual way is to begin with the home and proceed to the province and native land and then add the corresponding continent and other divisions and close with the earth as a heavenly body, but one could begin with the simplest, most undeveloped form of country and gradually pass to the more richly developed. It is an elementary method, is adapted to the powers of the pupil, advances from the near to the far, from the known to the related unknown, from the simple to the complex, from the easy to the more difficult, and is best suited to geographical instruction in primary schools and the lower classes in secondary schools. Among

¹ Sonnenschein: *Educational Codes. Directions for Geographical Teaching in the Royal Cadet Corps, (Prussia)*, pp. 152-153.

² Trampler: *Die Constructive Methode*, p. 6.

³ Sonnenschein: *op. cit.* p. 152.

⁴ Lindner: *op. cit.* p. 313.

⁵ Kehr: *op. cit.* p. 319.

⁶ Oberländer: *Der Geographische Unterricht*, p. 125; Trampler: *op. cit.* p. 6; Kehr: *op. cit.* p. 320; Lindner: *op. cit.* p. 314.

its adherents were Ritter, Henning, Harnisch, Diesterweg and Graser. The "Berliner Schul-Atlas" (1889) by R. Andree and R. Schillmann and the "Elementar-Atlas" by Justus Perthes are designed for the synthetic method. The Prussian code provides for essentially synthetic instruction illustrated by diagrams, by the terrestrial and celestial globes, and by maps.¹ The objection that this method withholds too long from the pupil a survey of the earth as a whole, and especially the understanding of the astronomical phenomena daily occurring before his eyes, may be removed by giving a general outline of mathematical geography and the divisions of the earth directly after completing the study of the native land.

III. The "concentric-synthetic method"² divides the entire geographical material into several courses, or circles, which are concentrically expanded according to the age and comprehension of the pupils. The entire range of the subject in its simplest outlines is considered in the lowest course, the same is enlarged in the second stage, and finally completed in the last year. This offers an opportunity to make use of the comparative treatment of the subject. As nothing actually new is offered in the successive courses, a living interest is likely to be stifled. Among its supporters may be named Lüben, Körner and Oberländer. Dr. Jütting and Hugo Weber have systematically arranged the material for a course of four years according to this method.³

IV. The "constructive method"⁴ seeks to give a graphic representation of geographical objects, and makes map-drawing its main feature. The pupils not only follow the statement of the teacher, but at the same time draw the sketch of the earth, or a part of the same, thus getting a vivid impression of the map and insensibly fixing in memory a great number of the places to be learned. In its substance it can be analytical or synthetic. Partly suggested and partly supported by Ritter, numerous works have appeared since 1825 in support of this method, among which are those of Lohse, Agren, Oppermann, Dielitch and Trampler. Some demand too much outside apparatus, others burden the memory with the numbers of latitude and longitude, others take too large and complicated a region as an object for drawing. Recent writers, as Kirchhoff, Wagner, Lehmann and Matzat, have rendered

¹ Sonnenschein: op. cit. p. 142.

² Oberländer: Op. cit. p. 139.

³ Lehrbuch für Anschauungsunterricht und Heimatskunde. Leipzig, 1878.

⁴ Trampler: Op. cit.; Oberländer: op. cit. pp. 128-136; Kehr: op. cit. p. 320.

service in simplifying the subject. In the directions to the Royal Cadet Corps¹ it is recommended that by the side of the "Heuristic" the "Drawing method" should be used, as "nothing can stamp the forms of the map so deeply on the memory as repeatedly drawing it. . . . The map drawing must be restricted to the production of simple sketches, and must be taught in the class . . . and the sketches are to be projected in accordance with the methods of modern cartography." The representation of the outlines of a country by rectilinear figures, the river courses by characteristic points to be fixed in memory (Lohse's method), the loading of the memory with a mass of auxiliary lines and geometrical figures of no value in themselves (Dronke's method), and the indicating of mountain chains by thick strokes (Von Seydlitz; hand-drawings by Kaufmann and Maser), are condemned. The "Drawing Atlas" of Debes, Lehmann and Kirchoff is recommended. This method adopts the meridians and parallels as the most natural auxiliary lines. Without much technical skill or great expenditure of time, simple sketches, answering the purpose, can be produced. Curves bulging outwards are recommended for representing mountain chains. The Kirchoff-Lehmann method, while commended, is not set up as the only available one.

V. The "associating method" aspires to a complete union of ethnology, history, natural history, and even physics with geography,² into one branch, which is generally designated as "Weltkunde." Rienhaus³ has prepared a work of this nature for the "Volksschule."

Kehr suggests that the teacher should employ the method suited to the stage of development of the pupil. According to Seibert,⁴ the course of instruction can be only two-fold, analytical and synthetic, and indeed here analysis and synthesis constantly appear side by side. On the one hand, in order to produce a complete picture by combining the parts, is not synthesis indispensable? And on the other, in order to understand the parts of any unit considered, is not analysis essential? When we speak of the drawing (constructive), concentric and grouping methods, we do not use the concept *method*, in the usual pedagogical sense; for, although drawing is indispensable in successful teaching, yet it takes only the place of a means; and with the expressions concentric and

¹ Sonnenschein: Op. cit. pp. 158-160.

² Trampler: Über die Zweckmässige Anlage für Volks-und Bürgerschulen, pp. 14.

³ H. Rienhaus: Weltkunde, Bremen, 1879.

⁴ Seibert: Op. cit. p. 3.

grouping methods are designated only certain ways of dividing the material. The grouping method places similar objects together, and may be used to advantage in reviews. Matzat¹ explains the working up of geographical material for elementary teaching on the Herbart-Ziller principles. Dupuy² commends the intuitive method and the synthetic course, modified at the end of the elementary course by a general survey of the earth and its divisions. Compayré favors the method which "starts from the village or the city where the pupil lives, and extends from place to place till it finally embraces the entire earth. The child must not be kept too long on these preparatory studies. . . . General geography ought to be combined with local geography."³ Laurie commends taking an outline study of the globe after extending the home study to the county, then the British Empire and other parts of the earth.⁴

In the codes of most European countries geography is a prescribed study.⁵ Germany is the model followed by most continental countries. "Only the Greeks," says Fischer, "have produced a Strabo and a Ptolemy, only the Germans a Humboldt, Ritter, Peschel, Richthofen."⁶ The elementary stage is known as Heimatskunde, combined with or preceded by teaching by actual observation. Excursions to districts around the school and during holidays to distant places is an essential part of this work as planned by Dr. Finger, who may be regarded as its inventor. The reading and understanding of maps is constantly kept in view. "The ideal aimed at is to have one continuous course of geographical instruction from the youngest school year up to the University. The elementary stage is met with in practically all primary schools in Germany and in the preparatory classes of the higher schools."⁷ This stage is rapidly finding its way into the corresponding schools of most other Continental countries. "In the average German Realschule and Gymnasium, the pupils leave school with a sound working knowledge of geography." Twelve of the twenty-one universities have professors of geography on a footing of perfect equality with other professors. The degree of Doctor of Philosophy and *Facultas Docendi* are conferred. Austria is following Ger-

¹ *Methodik des geographischen Unterrichtes.*

² M. P. Dupuy: *La Géographie dans l'enseignement primaire. Recueil des Monographies Pédagogiques, Tome IV.*

³ *Lectures on Pedagogy.* Payne, pp. 369, 370.

⁴ *Addresses on Educational Subjects,* p. 104.

⁵ *Royal Geographical Society, Educational Reports (J. Scott Keltie),* 1886.

⁶ *Die Fortschritte und die Entwicklung der geographischen Wissenschaft in den letzten fünfzig Jahren* p. 4.

⁷ *R. G. S. Edn. Reports,* p. 39.

many very closely. No country has shown greater progress than France during the past twenty years, a progress doubtless due to the moral effect of the disasters following the invasion and mutilation of their territory by foreigners, who by means of their maps seemed to be at home.¹ Recent progress in Italy has been of the most radical and hopeful character. In Switzerland, the "classic land of reliefs,"² geography occupies an important place. In Belgium, Holland and Sweden wise provision is made for this subject. In Spain, the geographical excursion is a feature worthy of special attention. Of England Mr. Keltie says in his report: "In this country it is believed that as anybody can teach the subject, so anybody can write a text-book of it."³ Geography was neglected by the great public schools "because it did not pay." Mr. Keltie's report and the Exhibition of Educational Appliances in 1885-86 were attended with success. Lectureships have been established in the great English universities, the public schools treat the subject with respect, the University Extension program gives it a prominent place, teaching has been greatly improved in the elementary schools, and text-books, atlases, maps and other appliances of a high standard are being issued.⁴ School authorities, practical educators, and geographers agree that a general education should include a certain proportion of geographical training;⁵ that the introduction to the subject should be given by a comprehensive knowledge of the home based upon observation, combined with the understanding of maps; that physical geography should be emphasized; that outside of Heimatskunde instruction should be based on globes and maps;⁶ that the causal connection of phenomena should be shown as far as possible, self-activity aroused, map-drawing employed, the needs of practical life constantly regarded; that the teaching should not degenerate into communication of mere nomenclature, and that an excess of names and numbers should be avoided.

¹ Compayré, Payne: *Lectures on Pedagogy*, p. 362.

² Diercke: *Die Anschauungsmittel für den geographischen Unterricht, Methodik des deutschen Volksschulunterrichts*.

³ P. 23.

⁴ J. Scott Keltie: *Applied Geography*, *Contemporary Review*, Sept., 1888.

⁵ Matzat: *Op. cit.* pp. 49.

⁶ Kehr recommends as further means of illustration the excursion, sand or clay, pictures and the stereopticon. *Op. cit.* p. 320-21.