Teaching and divulgation of mathematics in Savoyard and Italian pedagogic periodicals (1845-1917)

Chiara Pizzarelli

Department of Mathematics ‘G. Peano’, Turin, Italy

Research aims


G. Candido, *Il giornalismo matematico in Italia*, «Il Bollettino di matematica», II (1903), n. 11-12, pp. 203-213


- Inquiring on the origins of educational and mathematical publications in Italy
- Inquiring on protagonists and means to convey and divulge mathematics and pedagogy in schools
Historical and institutional context

Lack of scholastic background presented in the first educational publications in Piedmont:

- *Letture popolari* (1837-42), L. Valerio
- *Letture di famiglia* (1842-47), L. Valerio
- *L’Educatore primario* (1845-48), A. Fecia

1840 V. Troya, *Guidelines for teachers of primary schools*

1844-45 Main and provincial **method schools** (F. Aporti, C. Danna, V. Troya, G.A. Rayneri)

1847 Superior Council of Public Education (professors and academics)

4.3.1848 Statuto albertino (Printing liberty)

4.10.1848 Boncompagni Law

13.11.1859 Casati Law
List of members of the *SIE* (1849)

<table>
<thead>
<tr>
<th>Category</th>
<th>Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary teachers</td>
<td>268</td>
</tr>
<tr>
<td>Teachers (3 women)</td>
<td>242</td>
</tr>
<tr>
<td>Surveyors, Educational agency</td>
<td>118</td>
</tr>
<tr>
<td>Churchmen</td>
<td>71</td>
</tr>
<tr>
<td>Professors</td>
<td>63</td>
</tr>
<tr>
<td>Principals, deans of institutes</td>
<td>53</td>
</tr>
<tr>
<td>Lawyers, librarians, doctors, architects, notary</td>
<td>52</td>
</tr>
<tr>
<td>Graduate students</td>
<td>40</td>
</tr>
<tr>
<td>Politicians</td>
<td>27</td>
</tr>
<tr>
<td>Ministerial scholastic councils</td>
<td>14</td>
</tr>
<tr>
<td>The Brothers of the Christian Schools</td>
<td>13</td>
</tr>
<tr>
<td>University students</td>
<td>11</td>
</tr>
<tr>
<td>Others</td>
<td>9</td>
</tr>
<tr>
<td>Military academy</td>
<td>8</td>
</tr>
<tr>
<td>Engineers</td>
<td>6</td>
</tr>
<tr>
<td>Aristocrats</td>
<td>5</td>
</tr>
<tr>
<td>Army</td>
<td>5</td>
</tr>
<tr>
<td>Academy of Sciences in Turin</td>
<td>4</td>
</tr>
<tr>
<td>Associations, religious orders</td>
<td>3</td>
</tr>
<tr>
<td>Editors</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1013</strong></td>
</tr>
</tbody>
</table>

**Objective:** to improve education in every school grade, and enhance the social and cultural role of teachers, by sponsoring ideas and sharing practical and theoretical tips in the *official periodical*.

**Administrative board** (av. 6 professors out of 12 members) and provincial committees, members heterogeneity until the fusion with the *Società di mutuo soccorso fra gli insegnanti* (1854), when the numbers of teachers greatly increased.
Global conventions, discussions on recent problems and on how to solve them, petitions to the Parliament, comparisons of local and foreign experiences, actual political problems (teachers’ salary and education, school’s secularization…), the role of scientific disciplines.

Mathematicians among members (C.I. Giulio, as honorary president of SIE; G. Ansaldo, F. Rosellini, E. Martini, V. Mossi); chemists (S. Cannizzaro, F. Selmi); geologists (E. Sismonda); engineers (C. Ferrati), …

Political visibility: Superior Council of PE (1848-1859) composed of at least 1/7th of SIE members, up to 1/3rd. The Ministry of Public Education supported the SIE since the 1st Convention (participation of the ministry of PE in 1849, official call of the ministry of PE in 1859 to promote the initiatives of the SIE.)
**The SIE’s periodicals**

- **Giornale della Società d’istruzione e di educazione**  
  (Turin, Paravia, 1849-1852, biweekly/monthly, local, free for members)

<table>
<thead>
<tr>
<th>Year</th>
<th>Name</th>
<th>Position/Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>1849</td>
<td>G.A. Rayneri</td>
<td>prof. of Method Univ. Turin (collab. I. Pollone, mathematician)</td>
</tr>
<tr>
<td>1850</td>
<td>P. Baricco</td>
<td>scholastic surveyor and politician</td>
</tr>
<tr>
<td>1851</td>
<td>C. Cadorna</td>
<td>minister of PE (1848-49, 1858-59) (collab. E. Sismonda, geologist)</td>
</tr>
</tbody>
</table>

Splitting of the **Giornale** to provide up-to-date news and to follow specific topics pertaining education.

- **Rivista delle Università e dei Collegii**  
  (Turin, Paravia, 1853-1854, weekly, local, free for members)

<table>
<thead>
<tr>
<th>Year</th>
<th>Name</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>1853</td>
<td>C. Cadorna</td>
<td>id.</td>
</tr>
<tr>
<td>1854</td>
<td>D. Capellina</td>
<td>secondary teacher</td>
</tr>
</tbody>
</table>

- **L’istitutore**  
  (Turin, Paravia, 1853-1894, weekly, interregional/national, L.6 yearly)

<table>
<thead>
<tr>
<th>Year</th>
<th>Name</th>
<th>Position/Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>1853</td>
<td>D. Berti</td>
<td>minister PE, prof. Method</td>
</tr>
<tr>
<td>1856</td>
<td>G. Lanza</td>
<td>journalist, second. teacher</td>
</tr>
<tr>
<td>1871</td>
<td>E. Comba</td>
<td>second. teacher (Maths)</td>
</tr>
<tr>
<td>1874</td>
<td>A. Fassini</td>
<td>second. teacher</td>
</tr>
<tr>
<td>1880</td>
<td>V. G. Scarpa</td>
<td>schoolbooks writer</td>
</tr>
<tr>
<td>1888</td>
<td>D. Bocci</td>
<td>high school teacher</td>
</tr>
<tr>
<td>1892</td>
<td>G. Grammatica</td>
<td>schoolbooks writer</td>
</tr>
</tbody>
</table>
Giornale della SIE (1849-1852)
politics and university in the scholastic press

4 volumes, 16° biweekly/32° monthly, yearly: av. 48 issues, av. 768 pp.

- **Editorial board**: 11 members, 5 prof at Turin University (for *Physical and Mathematical Sciences*, I. Pollone, E. Sismonda), 6 teachers in primary / secondary schools

- **Collaborators**: professors (6, Method class at the University of Turin: F. Aporti pupils and following generations), secondary (8) and primary teachers (1 of Mathematics), but also a chemist (F. Selmi), economists and lawyers (3) and members of Parliament (2).

- Dedicated to *every scholastic level*, divided in:
  
  I. **Critical, scientific, literary and statistical studies on education (55%)** in 1854 P I «History of the State and of the educational progress inside and outside» and P II «Theoretical and practical works upon the four branches of public education, and on the primary one in particular»

  II. **Official deeds of the SIE (22%), SIE Conventions (78% of P II)**

  III. **Official deeds of Public Education (13,5 %)**

  IV. **Miscellanea, Bibliography and Correspondence (9,5 %)**
The ‘specialization’ - which mathematics for education?

- The Giornale della SIE is focused on the debate on mathematics programs and textbooks of every grade (university excluded):
  
  - **Methods and programs** tried in classrooms, exam themes
  - Examples of **dialogues** between teacher and class (G.A. Rayneri, *Lezioni di nomenclatura geometrica*), **scholastic material** (abacus, wooden models of geometric solids…)
  - Lessons and **solved exercises**
  - **Textbooks** (included foreign and translated ones, excerpts)
  - Reports of **Convention debates**. **Scientific topics**: polytechnic institutes, funding for technical schools, equality between classic and scientific teaching ...
**Rivista delle Università e dei Collegii (1853-1854)**

scientific journalism for secondary and academic education

2 volumes, 4/8° weekly, yearly: 52 issues, 316/417 pp., 816/958 articles

- The **Editorial Board** (1 professor, 1 engineer, 1 chemist, 1 sec. teacher) was nominated by the Board of the SIE

- **Specific compilers** for each section (1854), as F. Selmi (Scientific review), V. Cima and M. Lessona (Physical and mathematical sciences), A. Genocchi and an engineer (Mathematics and Mechanics)

Devoted to secondary and academic education the journal has 7 Sections

I  Critique and Teachings of universities and colleges (29/11,5%)

II  Chronicle and History of public education (8%)

(1853 monthly “Scientific publication”, planets’ discovery, new machines and scientific instrument, mathematics essays (25,6%)

III  (1854) Scientific and literary reviews (Astronomy, Chemistry, Physics, Geography, Meteorology, Natural history, Industry, Telegraph) (31,2%)

IV  Critique, bibliography (8,7/14%) V Necrologies, biographies (7%)

VI Scientifics and philological facts (Academic deeds of Italian and foreign societies, institutes and technical conventions) (8,2/12%)

VII News (foreign too, 8,4/4%), nominations, contests (5/12%)
The most original feature of the Rivista delle Università e dei Collegii is the presentation of facts and memoirs of scientific academies (local, national, and foreign ones), new discoveries (Astronomy, Geology, Chemistry), mathematical research news (Genocchi, Binet, Lebesgue...), short articles on the history of mathematics (Euclid, Pappus, Apollonius, Euler, Gauss...).
L’Istitutore (1853-1894) the most ancient educational publication

40 volumes, 16° weekly, yearly: av. 52 issues, av. pp. 824, 322 articles

- 4th in Italy by circulation (1200 copies, Ottino, 1875)
- Editorial board: secondary teachers, schoolbooks writers
  Collaborators: pedagogues, secondary teachers, teachers

Dedicated to primary and technical education, from 1856 also secondary, has these Sections:

I  Official deeds, SIE and mutual assistance, 1853-1858 (6.5%)

II  Education and teaching, (1864) Pedagogy (articles from foreign magazines, pedagogic expositions, scholastic systems (England, Germany, France) and teachers conditions V. G. Scarpa scientific education) (22%)

III  Literature, (1875) Themes and readings (20%)

IV  Practical exercises and readings, (1854) Didactics (16%)

VI  Bibliography, (1866) bibliographic review (17%)

VII  Facts and news (reviews of governmental deeds and other publications) with a sciences and technics section (1854-1856) (13%)

VIII Correspondence, Insertions, (1866) Epigraph and inscriptions, notes on award winning teachers, letters transcripts (4%)
The specialization

- **L’Istitutore** (1853-1855) by **D. Berti** collaborates with pedagogues, professors of mathematics (**F. Rosellini**), teachers and scientists

- "**Historical conversations**" (narrative on ancient mathematicians: Lagrange, Tartaglia, Torricelli, Beccaria, dialog between Socrates and Meno, …)

- Pedagogical articles by teachers (mental calculation, fractioneer); "**Questions**" (**Bulletin de l’Instruction primaire**, Paris, 1854)

A newspaper is not and **cannot be a textbook or a guide** to explain in minute details to teachers the **exercises** to be given in class. **This**, other than being annoying for general readers, **would impair the very same teachers**, cauterizing their creativity and killing their intellectual life.
- **Didactical activities** and method examples (dialogues, excerpts, geometrical models)

- **Monthly didactic program** by discipline, exam themes every six months (elementary and normal), bibliographic news and reviews (L. Cremona, *Elementi di Geometria proiettiva*, 1873)

- «**Didattica**» (exercises with explained solutions, notes and contests with solutions from normal school students)
- **L’Istitutore** (1880-1888) (1892-1894) from V. G. Scarpa to G. Grammatica renewed didactical contents (Physical education, scientific and technological discoveries, agriculture, drawing, feminine education). The publication split into *Pedagogy* and *Didactics*.

- **Drawing** for elementary, professional and female schools (1880)
- 2 chapters translation from *La langue des calculs* by E.B. de Condillac
- Excerpts of terrestrial physics, little *technological dictionary* of railroads
- R. Malagoli, *Arithmetic textbooks supplement*

- **Arithmetic riddles** (V.G. Scarpa), exercises conforming to programs (G. Grammatica). Since 1892, just the *Didactics* section remained.
The *Giornale della SIE* is a *unicum* in Italian educational publication, because of its authority, visibility, authors (professors of the University of Turin, teachers), and ability to influence public and political-scholastic contexts. Very different audience (politicians, professors, teachers, erudites, …) and topics. ➔ Major interest for *mathematics* in the reports of discussion’s conventions.

The *Rivista delle Università e dei Collegii* enhanced the superior grade education spreading. Highly expert authors (Physics and mathematics University of Turin), limited audience (secondary teachers, university students), topics concerning more sciences’ divulgation and update than on didactics. ➔ Major interest for *mathematics* in the academic news.

*L’Istitutore* gives the start to modern educational publications. It sustained teaching, updated on pedagogy, sponsored associations. Same authors and audience (secondary and primary teachers), colloquial tone: “*dear teachers*”, many answers to questions, praises to awarded teachers, …), almost all didactic topics. ➔ Major interest for *mathematics* in every-day primary teaching (programs, exercises, schoolbooks, …).
Turin became the **main hub** for educational publishing, with 6 publications (in 1873, Milan and Palermo 5, Florence 4, Genoa 3, Rome 1). The 37.3% of Italian periodicals was Turinese.

- **La guida del maestro elementare italiano** by G. Parato  
  (Turin, Subalpina, 1864-1897, weekly / biweekly / monthly, national, **3000 copies** in 1867). **SIE periodicals’ collaborators** (G. Allievo, G. Lanza, G. Molino-Colombini, N. Tommaseo, …). Mathematics in *Supplement* «Scuola pratica».

- **L’osservatore scolastico** by G. Borgogno  
  (Turin, Bellardi, Appiotti e Giorsini, 1865(?)-1899, weekly / biweekly, national, **1500 copies** in 1867). SIE’s collaborators (J. Bernardi, G. Grammatica…). Mathematical *invention problems, numerical riddles, …
  Didactics supplements. It absorbed the *Istitutore* in 1894.

**Chronological distribution of pedagogic periodicals**
Evolution of the publishing context: specialization

Until yesterday, the educational magazine was simple, and so very easy to be made. It started from a comforting premise. **Teachers, it was thought, cannot waste their time and brains to prepare lessons, and they might even be unable to do it:** thus, it is necessary to do it for them. They would gladly spend five or six lire to avoid inconveniences and study and to gain time. [...] 

Luckily, **today that kind of magazine is not enough anymore.** The teacher wants something else: he has more self-conscience, and **has the right to feel offended if somebody thinks of him as a parrot merely repeating what the educational publication writes down for him every Saturday. He is looking for something able to elevate him, to talk about themes that matters, to prepare the way for the teacher, but do it so in a manner that leaves him able to study and reach the goal for himself.** [I. Bencivenni, «La scuola italiana», 1880, pp. 86-87]
The mathematical journals for schools

Giornale di matematica elementare e computisteria
(Turin, 1874) G. Massa (V. Gastaldi)

Il Piccolo Pitagora
(Bergamo, 1883-1884) A. Cavezzali (G. Massa)

Il Bollettino di matematiche e di scienze fisiche e naturali
(Bologna, 1899-1917) A. Conti

Rivista di matematica elementare
(Rome, 1873-1874) G. Massa, V. Gastaldi (F. Giudice, D. Besso, A. Lugli, A. Genocchi)

Periodico di matematica per l’insegnamento secondario
(Rome, 1886-1917) D. Besso, A. Lugli, G. Frattini, G. Lazzeri

Rivista di Matematica
(Turin, 1891-1906) G. Peano

Il Bollettino di matematica
(Bologna, 1900-1940) A. Conti, E. Grassi, E. Nannei

Bollettino della Mathesis
(Rome, 1896-1907, 1909-1920) G. Frattini, R. Bettazzi, E. De Amicis
Common needs and new interlocutors

Educational publishing specialized in mathematics:

- Maintained the **same aims and means** to reach them (associations, exercises, divulgation)
- changed the **authors** (contact between primary and secondary schools with University)

**Bollettino di matematiche e di scienze fisiche e naturali** (1899-1917) Scientific and didactical articles (sharing of class experiences), historical magazine; **Questions and Answers**; Bibliographic section; Curiosities, thoughts and quotes; Received publications.

**Bollettino di matematica** (1900-1940) Teaching programs, rules and methods to implement them; **exercises with more than one way** to solve them; school reforms (especially after 1923) and **comparisons with foreign countries**; bibliographic reviews; competitive rankings; readers correspondences. Collaborators: R. Bettazzi, E. De Amicis, G. Loria…
**Periodico di matematica per l’insegnamento secondario** (1886-1917) Methodological and mathematical articles (*Supplemento al Periodico* since 1897 for students); proposed exercises (with many different solutions offered by readers); exams themes (Italy, abroad); reviews and suggestions on books and articles; sponsoring of Mathesis association; geometry tables. Collaborators: E. Beltrami, E. Cesàro, A. Conti, G. Loria, F. Enriques, …

**Bollettino della «Mathesis»** (1896-1907) Association's deeds (news from committees, new inscriptions, social quotes) and public administration ones; Scientific articles (lessons for conventions); reviews of foreign and national publications.

Mathematicians interested to education and teachers training: R. Bettazzi, G. Peano, C. Segre, G. Loria, …