

From the archives

Editor's note: the following remarks are extracted from an article entitled "Should a mathematics teacher know something about the history of mathematics?" by Hans Freudenthal (1981), published in FLM 2(1).

Aren't there more important questions to be asked on teacher education? Questions like: should a mathematics teacher know something about mathematics? Or about the mathematics he is teaching? Or about the use of mathematics, about how it is applied (and by that I do not mean a study of so-called Applied Mathematics)?

I just ask because if I did not, other people would wonder—and rightly so—why roam the remote expanses of history as long as problems near at hand have not been solved, nay, not even been tackled? I apologize, it is just my theme: the history of mathematics—what it can mean to the teacher, to instruction, to the student.

Again, isn't it running away from greater responsibilities to cast ourselves upon the mercy of history? Can we instil into "inhuman" mathematics more humanity by convincing the learner that mathematics has been conceived by men, or wouldn't it be a shorter way, a stronger proof, to have some mathematics they are really concerned with re-created by the students themselves?

The argument closest to hand—and the most often heard—is that knowledge of the history of a subject area helps in understanding the subject matter itself. I doubt it—at least as far as mathematics is concerned. Mathematics has a long history, the longest of all sciences. A history of dead ends, in which mankind will not be lost again, and which are only interesting as curiosities. A history of progress where even the present state is not the last judgement. The student, however, learns a mathematics that to him is the *non plus ultra*. No doubt there have been pre-stages, but are they worth remembering? Whoever learns a second modern language learns it in its present state, doesn't he? Well, perhaps at universities one might nurture the belief that a language cannot be taught by disregarding its historical grammar, French should not be detached from medieval French and vulgar Latin, and so on; and indeed this knowledge could be useful to students who aspire to more profound linguistic understanding. But Sanscrit as a precondition for studying modern languages was abolished quite a time ago at European universities, notwithstanding those philologists who taught early in the present century and who now turn in their graves.

[...]

Should the one who teaches mathematics at school know something about its history? Let me divide teachers according to the age of their students: 6-12 (primary school), 12-16 (lower and middle secondary level), above 16 (higher secondary level).

First of all the primary school teachers. In my own country they are trained in—if I am not mistaken—17 subjects, and though educational theory, taught in difficult educationese, and physical education—as the most dangerous subject—lay a heavy claim on the timetable, mathematics is relatively well endowed with two hours a week during two years. How much history of mathematics could a teacher trainer put into this frame? One might as well ask how much time is available for mathematics along with its didactics. The question is meaningless: it is posed the wrong way. Two hours are too little to be subdivided. Moreover with 17 subjects the student teacher is already more subdivided than becomes somebody who is expected to teach as an undivided person. So much for my own country. I do not know much about other countries, but I am afraid even under other conditions the problems will be the same.

The situation of the lower secondary level is more favourable. At this level teacher training is restricted to two subjects, which on the other hand are to be studied more thoroughly. Future teachers should learn more than they are expected to teach, indeed. This "more" can mean quantity, and then an indeterminate one. It can also mean profundity. Can history contribute to profundity? Yes, provided it means profundity to the trainer. But where do you find this kind of trainer?

At our universities the programmes are more flexible. One of the possible choices of minor subject for the future teacher is the history of mathematics, at least at some universities. What can a restricted study of history mean? Is it worthwhile?

[...]

I stress the history of science as integrated knowledge rather than items stored in well-stocked drawers, each of them labelled and opened when the timetable announces the history of the subject matter. I do not exclude this latter kind. At the university students who like it should be given the opportunity to be active in the history of their subject. Being active does not necessarily mean attending courses in this field. History is worth being studied at the source rather than by reading and copying what others have read and copied before. Sources are nowadays easily accessible, though astonishingly few know this fact. Whoever is interested in the history of mathematics should study the processes rather than the products of mathematical creativity.

References

Freudenthal, H. (1981) Should a mathematics teacher know something about the history of mathematics? *For the Learning of Mathematics* 2(1), 30-33.