

L^AT_EX in secondary schools

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Abstract

At Aalborghus Gymnasium, Denmark, a class has been taught L^AT_EX since autumn 1999. Only about 25 % of the students (17–18 years old) now use L^AT_EX, but learning L^AT_EX has inspired cooperation and stimulated the interest in science. Better installation instructions will make the introduction of L^AT_EX easier, but there is little doubt that free software like T_EX and StarOffice has a promising future in Danish secondary education.

1. Background

In Denmark 90 % of all students in secondary schools have a computer at home and it is connected to the internet. Apart from a minority they do not know a lot about computers and their use, but they like writing essays and other kinds of home work on the computer, and nearly all of them use Microsoft Word. This is working fine as far as Danish, foreign languages and social science are concerned, but when it comes to writing papers in mathematics and physics the shortcomings of a word processor which was basically made for writing business letters become all too obvious. Therefore I decided to teach my physics class 1999x L^AT_EX almost two years ago.

My intentions were not only to teach them a suitable program for this particular purpose but also to create an inviting environment for learning science: The number of students who choose science, particularly in physics, at the university after secondary school is dwindling in Denmark as in most other European countries and I hoped that the collaboration in learning L^AT_EX would give them an idea of how students and scientists work together so that the experience could make the choice of science a little more attractive to them.

2. Realisation of the plan

During the summer holiday I wrote a manual on installing MikTeX on a Windows computer — www.hindsholm.dk/soeren/tex/vejledning.html — and I made a cd with the necessary files. As soon as I met my students I introduced them to the plan and after the ordinary lessons I gave them two short introductions: 1) About the system in general, and 2) Exercises.

It soon proved that the installation was an insurmountable difficulty and I had to visit most of my students to install MikTeX. This is the first lesson I was taught: Installation instructions must be better if L^AT_EX is going to be widespread among students at secondary schools. In particular how to set up the specific language needed and how to make the main program cooperate with the editor and a viewer. We choose T_EXShell as it is free; I am well aware that WinEdt is better, but my school has a definite and clear policy about illegal software.

Another problem was how to install MikTeX on the Windows NT server at the school. The system administrators have many things to do and I could not just take their time when an experiment like this one, including only a minority of the students, was concerned. Therefore I had to do most of it myself and it took a considerable amount of time because no straightforward manual was available.

The teaching of L^AT_EX was rather simple. First I showed my students how a text was composed in the editor, then compiled and at last shown on the screen and perhaps printed by means of YAP. This was a clear demonstration of the technique of the compiler as opposed to the WYSIWYG (or as we would rather put it *what you see is all you get*).

Then I gave them a couple of handouts: `sampledk.tex` and the output of this file — it is of course a Danish version of `sample.tex`. We went carefully through the source and discussed how L^AT_EX had treated the input.

The final lesson was a practical exercise. They brought with them a paper in physics or maths and then they started writing; I was present in the computer room so that they had access to immediate help. And that was it.

Of course they had not learned L^AT_EX by now, but they knew enough to start writing on their own, and when they had problems we communicated at school or by sending e-mails — they are a wonderful tool for teaching a subject like L^AT_EX.

3. Results

One year and six months after we started approximately 25 % of the students use L^AT_EX when they write rapports etc. in physics. This is disappointing, I think. But it is partly due to the sad fact that last autumn our

headmaster fell ill and I had to take over her duties. Because of this the students did not have more lessons in L^AT_EX at a moment where some of them needed a little encouragement.

But in other ways the experiment has been rather successful. Those who do use L^AT_EX have been really helpful to one another and even those who do not use L^AT_EX have been affected by the positive spirit that arose from collaboration in the class. More than 50 % of the students chose to have physics during their last year in secondary school where physics is not compulsory, and I think that more than 50 % is almost a national record. I can only recommend that teachers try teaching their students L^AT_EX because of this and because it seems to improve the students' respect and admiration of a teacher when he tries to teach them something special and believes they can do it.

Furthermore the introduction of L^AT_EX in a secondary school has a general effect on the whole institution: A few students from other classes who take a particular interest in computing will soon pick up the idea and learn by themselves or by help of others. Some of them will become very able and show to the school what L^AT_EX can do for writers. This has indeed happened at our school.

4. The future

There is no doubt that free software has a promising future in Danish secondary education. Now we spend huge amounts of money on Microsoft licenses and time on their systems which are hard to manage in an economical way. Some schools have already migrated to StarOffice and Sun Ray thin clients which seem to be the best alternative for the time being.

I hope L^AT_EX is part of this future. But if it is going to be it must be easier to install, both on stand alone computers and servers and on each school a critical percentage of the students and teachers must be reached.

The L^AT_EX-society must keep this process going by continuous demonstration of the qualities of L^AT_EX. An example of this demonstration will be the question paper for the Danish national exam in classical Greek this summer; it has been made with L^AT_EX, and this way Greek used L^AT_EX for this purpose before physics and mathematics in Denmark.

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Opgaver

Tallene i parentes henviser til linjerne i den græske tekst

A. Analyseopgaver**Begge skal besvares**

1. Find følgende former: ἔληξεν (1), κεκοσμημένη (9), ἡγάσθησαν (10), στόμασι (20), συνομόσια (23). Bestem formen, herunder ordklassen, og anfør opslagsordet.
2. Giv en syntaktisk analyse af sætningen: Καὶ γὰρ ἦρουν τοῦ Διονύσου μὲν ἐπερωτῶντος αὐτήν, εἰ φιλεῖ αὐτόν, (21-22)

B. Oversættelsesopgaver**Begge skal besvares**

1. Giv en mere ordret oversættelse (version) af stykket: Σωκράτης δὲ καὶ τῶν ἄλλων οἱ ὑπομείναντες πρὸς Λύκωνα καὶ τὸν υἱὸν σὺν Καλλίᾳ περιπατήσοντες ἀπῆλθον. (28-29)
2. Gør i samme tekststykke rede for,
 - a) hvilke(t) græsk(e) ord der er gengivet med "hvem der ellers var tilbage",
 - b) hvorledes περιπατήσοντες er gengivet i den danske oversættelse, og hvad forskellen er mellem den græske tekst og den danske oversættelse.

C. Fortolkningsopgaver

Besvar spørgsmål 1 og to af de følgende, i alt tre. Svarene nummereres.

1. Gør rede for spillet mellem illusion og virkelighed i tekststykket.
2. Kommentér det guddommelige og det menneskelige i de to rollefigurer, Dionysos og Ariadne.
3. Diskutér, hvad der ligger i ordene καλός γε κάγαθός i linje 3.
4. Gør med udgangspunkt i teksten rede for symposion som græsk kulturfænomen, jf. fig. 1.
5. Begrund ud fra teksten de tilstedeværende personers sociale og politiske status.
6. Hvad viser teksten om seksualnormer i Athen?
7. Diskutér, hvorfor det er Dionysos og Ariadne, der fremstilles i pantomimen.
8. Hvilket bidrag giver teksten til opfattelsen af Sokrates?
9. Beskriv fig. 1 og/eller fig. 2 og giv på baggrund af denne beskrivelse en datering og en redegørelse for, hvad figuren forestiller og betyder.

Figure 1: