BIJLAGE I

Working Group 1: Education

March 1991

1 Task

As a complementary note to the earlier report on education, see appendix to the MAPS of the 4^{th} meeting, the following WG task description.

- To advise NTG about educational matters.
- To maintain a list of what courses are offered by whom, when and under what conditions.
- To participate in the international discussion about TEX related courses, e.g. the standardization of the various modules.
- To stimulate the development of standard courseware.
- To stimulate the development of tools in order to create and maintain courseware.

2 What courses?

The WG strongly advises NTG to offer

- LATEX (beginners, advanced and special topics(styles); LATEX for personnel),
- TEX (beginners, intermediate, advanced, and special topics, e.g. TEXing math),
- Metafont (logo design, font design),

along with the 'NTG-days.'

Up till now, since the 4^{th} NTG meeting, only Kees van der Laan submitted an announcement of courses (see Appendix); no modifications have been received. A request for a course for personnel has been received. This was taken care of by Piet Tutelaers; TUE absorbed those TUT people in their classes.[1]

At the moment a course about 'literate programming with Web,' or Postscript is considered too early, c.q. not the issue of NTG.

Course modules

No follow-up of the Bart Childs discussion has taken place yet. At Cork the education issues were put on the agenda, but postponed. At the extra March BoD meeting it was submitted, but, helas,... too late. Kees will rise the issue again at Dedham, July 1991.

3 Teachers

3.1 International

- **Amy Hendrickson** (TEX and Postscript),
- **David Salomon** (Output routines (see his tutorials TUGboat 11# 1, 2, 4.)),
- **Doug Henderson**(Metafont),
- **Malcolm Clark, Chris Rowly**, (LATEX beginners and advanced),

3.2 Local

See 'maintained list,' and Appendix.

3.3 Courseware

In principle the next courses should build upon the teaching material provided earlier. The committee would like to receive copies of the material of last year and discuss suitability of the courseware as a starting point for 'standard' courseware. (Kees attended Amy's class, so he is aware of her notes. Piet attended Victor's class, so he is aware of his notes. Piet has announced the availability of a set of tranparencies emerging from the TUE LATEX course.)
Background to courseware are the (emerging) books on TEX, LATEX and Metafont.
We are not (yet) familiar with the video tapes of TUG.

3.4 Review

In reviewing attention has to be paid to

- **Contents**
  Suitability, completeness: exercises and answers. Childs' selftest schemes should guide a participant to the appropriate level.
- **Pedagogics**
  How is it build up? What pedagogical principles are used?
- **Price**
  What do the teachers charge for providing there 'notes,' in order to circumvent reinventing the wheel.
- **Teachers**
  Are teachers willing to work with, or start from, basic material provided by others and refereed by committee?

[1] Background info: Charles R. Martin: TEX for the TEXnical Typists. TUGboat 11#3, 425–428.

- **Copyrights.**
  To be negotiated by the (NTG) board.
  Some teachers (Doug Henderson for example) provide their notes for free, for the best of TEX etc.

3.5 Tools etc.

Ton modified SliTEX such that a header containing context sensitive and background information can be supplied. It has not yet been β-tested. Van Oostrum's 'fancy headings' could become a general means for providing context sensitive information as well as background information in the header/footer of transparencies. trspar.sty has not been released for β-testing.

3.6 Course fees

The course fees should be in agreement with those handled by TUG or a private company, and should provide the means to pay:
- the courseware to be supplied,
- the (international) teachers,
- the rent for the (computer) location and infrastructure, the catering,
- the organizational overhead.

The principle to be adhered to is: Those who benefit most (the course takers) should pay, eventually subsidized by NTG for strategic courses.

Because of agreements made with other LUGs and TUG
- Members (of any TUG) enjoy 10% reduction.
- Of every LUG a delegate has to be invited to participate at no costs.

As a rule of thumb: ≈Fl 300,- per day, per participant.

3.7 Organization

For the organization it is best to loosely couple courses to the NTG-days, also in responsability.

The task to organize courses each year, preferably along with the NTG days, could be delegated to the education committee.

Januari, 1991

Kees van der Laan
Ton Biegstraaten
Piet Tutelaers

4 Appendix Contribution to TUG BoD

Motion for march TUG BoD meeting:
- adopt the need for an education committee,
- appoint people (to be invited) for the committee,
- thoughts about exams committee(s).

From: Kees van der Laan

> Because TeX etc. is the best,
> but helas complex
> and full of TEXfalls
> education is paramount.

Another committee: on education

Next to the important committees on the air I like to table the education steering committee.
The task of the committee is

> To plan and guard all business related to TEX etc. education, and report to the board about the matter.

A few questions I have had on my mind rather a long time, might arise awareness of the need for this committee, especially for those not already in favor. I know that education is not much of a respected issue in the USA, and that research has it. I don't agree with that, and . . . in Europe it is different.

The basic idea is that better TEXnique will be acquired when guided by experienced teachers. It will save time and energy, and generally one will enjoy it, have a nice time and make new friends. I'm self-educated on the issue, it took me a long time, and still have some blind spots, with respect to incompleteness and misconceptions, I guess. Furthermore, THE selfeducation pitfall is too complex TEXing, opposing the literate programming attitude.

The questions

1. **Why?**
   Why are TEX etc. courses provided? For the proliferation of good TEXnowledge? For money making?
2. **What price? Discounts?**
   At cost? Discount policies are needed.
   Teachers and exam committee members have to be budgetted. They are free to donate their salary, though.
3. **For whom?**
   Whom is it aimed at? Scientists? Typists? High-school students/teachers? USA-based? World-wide? I'm not persuading to be exclusive, rather I would favor to plan strategic and attainable goals, in crescendo.
4. **When?**
   Just along the main meetings of TUG? Any LUG as well? Demand-driven, though.

5. **Where?**
   Ideally continentwise, but that is also demand-driven.
6. **What?**
   What is the contents of the various modules and how are the modules related to each other, overlap? See prior discussion on that, guarded by Bart Childs. Perhaps Bart could provide the committee with the material he solicited for in Karlsruhe and along with his selftests?
7. **Courseware?**
   We should build upon courseware. Not reinvent the wheel. We should have build upon Samuel's pioneering work. Don't provide another 'Gentle TEX' and leave it to that, however useful that might be at first sight. We should reiterate, improve, improve, improve, and finally ... improve. What about the (video) tapes? (See TUGboat ads, e.g. 6#1, p43.) Are they of any use? Experiences? Why did that mechanism not work? Why not sell those tapes at cost? Imagine DeK at home!
8. **Examinations?**
   We should provide for examinations —not just a present-certificate— and make the total *courses+exams* public. LUGs might integrate these courses in their national programs for (non-)regular computer science education. For example as modules in the DTP or EP area. When we have made it available, LUGs can also go ahead and make the best out of it. The above entails appointment of exam committees. Exam committee work is by no means trivial, as I know from experience.
9. **Who are the teachers?**
   We should start with 'teaching the teachers.' I mean provide courses with TUG examinations at the end, in order to qualify for a TUG teacher. (The Dutch bridge union provides similar courses and exams, by no means easy! We also have a national Exam Institute for non-regular computer science education, directly linked to the economics governmental department!) Exams are good, and might stimulate TEXcognition, and ... might contribute to respectful TEXing! We have a bootstrap problem though. Could DeK be of help? Stanford teacher-(summer)-courses?
10. **Pedagogics?**
    Not only TEXnowledge should be the matter. Attention must be paid to pedagogical principles to be used. TUG courses can be sold under the Gagné pedagogical principles, to name but one that is popular here. It should be part of the teacher-courses.
11. **Operational procedures.**
    Provide operational procedures for the announcements and follow-up of the courses. Evaluation forms. What to do with the answers?

I hope by the above raised questions that everybody will agree on the need for an education committee.

Proposed committee members

Internationally?
- Pro: worldwide,
- Con: Long decision lines, too many factors involved.
Nevertheless, do it that way, but select knowledgeable and efficient working people.

My suggestion for the committee members (I don't know whether those people are willing to accept the invitation to be on the committee): Bart Childs, Doug Henderson, Amy Hendrickson, David Salomon, Malcolm Clark (Cathy Booth? Chris Rowley?), Kees van der Laan, Joachim Schrod?, Stefan von Bechtolsheim?

For the money involved, there should be no problem, I consider investment[2] in teaching paramount for the future of TEX.

5 Appendix: New teacher, TEXing Math course

By this note I like to make known to the NTG community that I —Kees van der Laan— am in for teaching. The courses I have on my list are
- TEX beginners and intermediate, according to Childs' set-up (3 days).
- TEX topics: TEXing Math (see set-up below).
- LATEX beginners, demand-driven along the scheme given in de Bruin(1989; Dutch)[3] (3 days).

Course set-up: TEXing Math

The idea is a 3-day course, where the first two days need a classroom with overhead projector. Traditional math typography will be treated from Swanson(1986). Theory will be alternated with exercises, mainly from the TEXbook. Participants have to work out the exercises in vitro, with paper and pencil. The 3^{rd} day is devoted to hands-on. Participants can get a start with their own publications, if any, otherwise real mathscripts will be provided. PC's (and the projector) are needed for the 3^{rd} day. (I'm familiar with MS-DOS PC's, VAX VMS, UNIX, but ... I tend to abstract from the hardware.)
The material treated is plain oriented. It is basic for TEXing math via $\mathcal{AMS}$-TEX, LATEX, or ... , whatever!

For whom?

Assumed level of
TEXnowledge: intermediate, more or less,

[2] Even better when in phase with other projects like distribution of PD PC TEXware.
[3] Bruin, R. de, C.G. van der Laan, J.R. Luyten, H.F. Vogt(1989): Publiceren met LATEX. CWI syllabus 19.

Computer literacy: familiarity with an Operating System, and bring along your favorite editor.
It is aimed at authors as well as typists.

Courseware.

The TEXbook.
Swanson, E. (1986): Mathematics into Type. AMS.

Course set-up

- **First day: Morning** (Swanson, TB ≈Chapter 16, 17)
  Capita from Swanson.
  Math in text and in display.
  Math mode, Greek letters, accents, superscripts and subscripts.
  Context sensitive symbols like openings and closings, varying size.
  Ordinary formulas: Operands and Operators.
  Formulas of class 0, empty braces.
  Expressions (with `^`, `*`, `/` (and `\over`),+, −; functions, openings and closings (a.o. norm fences); integration, summation with and without limits; over/atop/abovewithdelimeters; textstyle, scriptstyle, and scriptscriptstyle.)
- **Firts day: Afternoon** (TB ≈Chapter 18)
  Punctuation.
  Non-italic letters in formulas. Math function names. `\hbox` vs.`\rm`.
  Spacing within formulas (automatic, to be suppressed, to be added: table TB170).
  Dots (ellipses).
  Line breaking.
  Lemmas, Theorems and the like.
- **Second day: Morning** (TB ≈Chapter 18, 19)
  Summary first day (Math atom classes!).
  Macroscopic aspects:
  displaylines (free format),
  alignment without and with numbering,
  interruption of aligns,
  splitting long formulas.
  Matrices, arguments hypergeometric functions, cases, overbracing/underbracing.
- **Second day: Afternoon** (TB ≈Chapter 19, Appendix B 362, D, E, F)
  Automatic numbering.
  Referencing to equations by names.
  Left justification.
  Font tables.
  Creating new operators (`\buildrel`, `\mathop`, and `\mathchoice`).
  Font families of manmac, size-switching macros.
- **Third day:** Hands-on with a real paper.
  The day will be concluded by mentioning the $\mathcal{AMS}$-TEX packages and services, and tayloring your editor into a math TEXing intelligent one.

The material to be treated can be adapted on request. The 3^{rd} day could be filled with treatment of plain's math macros, Appendix B-6, p357–362, yielding a complete theoretical course. The other way round, hands-on labs at the first two afternoons as well, is also possible.

Because most, if not all, of the material is in Swanson(1986) and the TEXbook, not much handouts will be needed. AMS folders and packages would be beneficial.

Salary

According to current practice, to be agreed upon.

CV

Studied applied mathematics at the University of Amsterdam. Worked at the CWI for a couple of years, and after that at the computer centre of the University of Groningen. Have been active in writing mathematical software for the NUMAL, IMSL as well as the NAG library, in FORTRAN, ALGOL60/68. Temme and I published a book about evaluating Special Function software. I published articles about mixed-language programming, especially interfacing high-level languages (ADA, PASCAL, ALGOL68, Simula) to FORTRAN (numerical libraries). Have written courseware for FORTRAN, ALGOL68, numerical software, and 'proving-program-correctness' courses.

Since a couple of years active in the EP area. Published with colleagues at the centre a course book on LATEX. Have written several reports about LATEX, TEX and SGML. A couple of articles have been published in TUGboat. I was one of the initiators of NTG, and I am its first president. Because of that I was invited to become vice-president of TUG. In 1989, I also developed a one-day SGML course, held at Stanford.
I'm also member of one of the many exam committees of EXIN, the examination institute for non-regular computer science ducation, resorting under the governmental economics department.