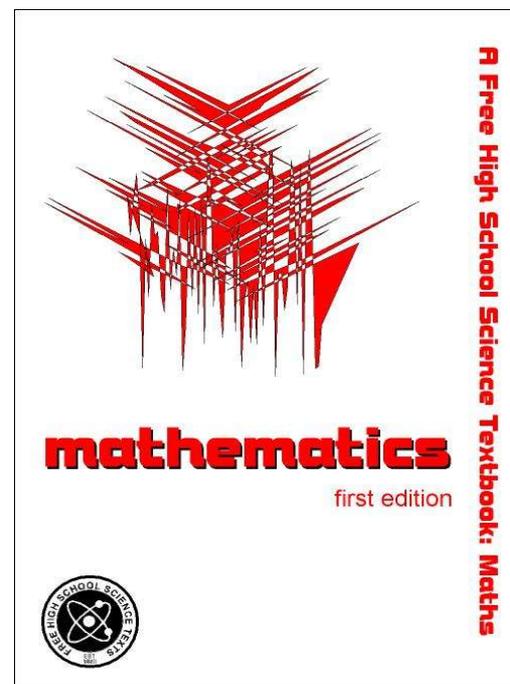
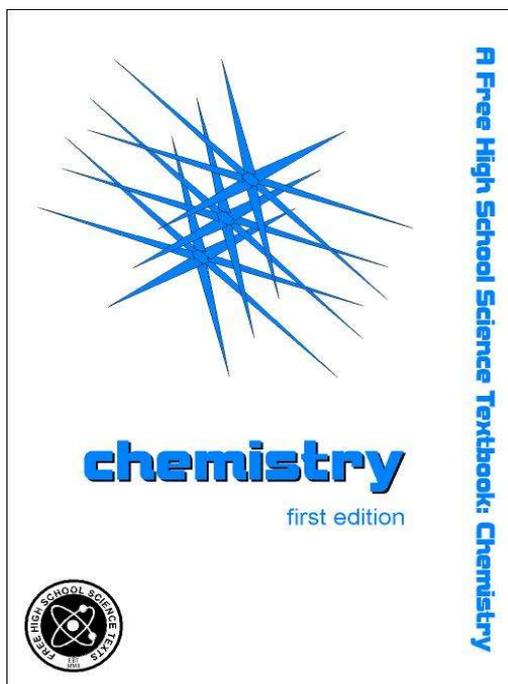
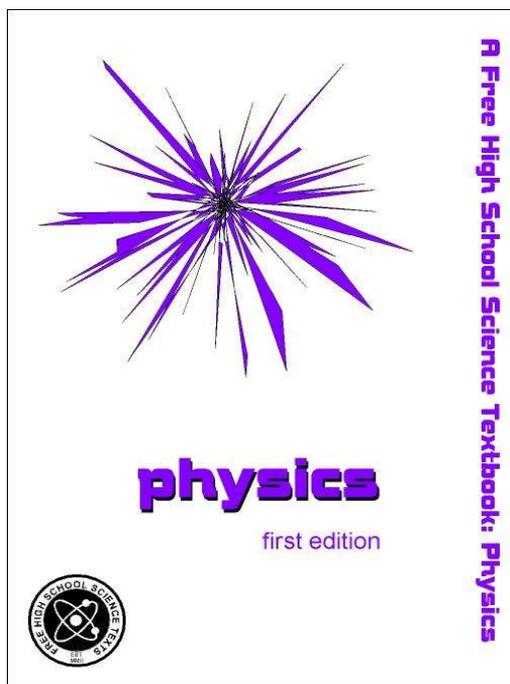




FHSST: Free High School Science Texts

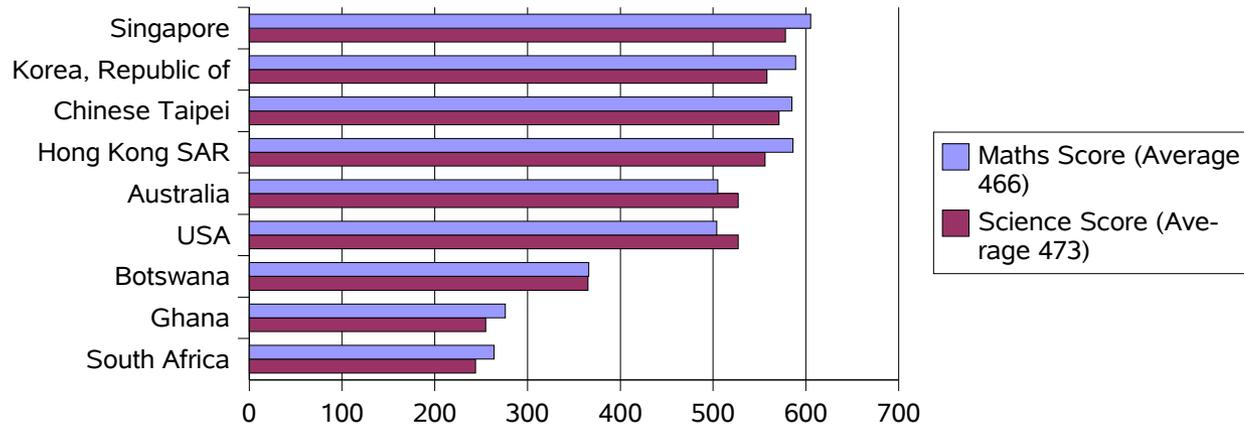




The Challenge:

- There is a severe lack of educational resources in South Africa which needs to be addressed, especially in the area of the physical sciences⁽¹⁾
 - 1 book per 5 learners is unacceptable!
- South Africa does not compare favourably at the high school level in the areas of maths and science on a world scale:

Science and Mathematics Scores of Selected Countries



- Scientists in SA are not yet demographically representative

(1) S. van der Berg and R. Burger, The South African Journal of Economics. Vol. 71:3 September 2003

(2) TIMSS 2003 Study Results for Grade 8 students



A Solution: FHSST

The Free High School Science Texts project aims to address these problems by:

- Producing a complete set of high school science textbooks (Grade 10-12) at a cost of only ~R15-R20 per book:
 - Free of author's, editor's and publisher's royalties!
 - Using open-source ideology and methodology
 - Using print-on-demand technology
- Printing and distributing hard copies of the books across South Africa
- Making the content available to all educational initiatives, both local and international:
 - Support other initiatives, NOT compete!
- Providing the content online, free of charge, in digital format



FHSST Ideology

FHSST is based on the premises that:

- Education is essential to improve quality of life, sustain democracy and maintain stability in a country
 - Quality education is imperative to building a strong South Africa, which is self-reliant and a global leader
- Many small contributions can add up to a greater whole
 - Open source ideology and technology is the project backbone
- Information must be shared freely
 - Essential educational resources are currently out of reach of the average South African due to high costs – this has to change before we can move forward



The Books

Beyond pure content, the books will provide additional information in line with an outcomes-based approach:

- Up-to-date **maths**, **physics** and **chemistry** content in line with the new Grades 10-12 syllabi:
 - Written in language accessible to second-language English speakers
 - Extension sections beyond the syllabus for general knowledge and interest

- Detailed worked examples:
 - Development of step-by-step problem-solving techniques
 - South African context

- Real world applications and career information:
 - Exposure to a large scope of real world career paths through chapter-ending essays
 - Contexts of different areas of science



How do we do it?

(1)

FHSST is a virtual organisation run like an open source software development project:

Content Gathering

- All content is written on a **purely volunteer basis**:
 - ~50 people have so far contributed to the project in various ways:
 - Post-graduate science students and education students
 - Ph.D. physicists / lecturers
 - Undergraduate science students
 - Web developer, graphic designer, journalist
 - Mostly South Africans, but also some international contributors
- The administration of the project is enabled by open source software:
 - The books are hosted on servers at <http://savannah.gnu.org> for free
 - Mailing lists enable cheap and easy communication across continents and time-zones
 - Open source type-setting mark-up language, LaTeX enables book formatting



How do we do it?

(2)

Efficient distribution of the books will be enabled by two main factors:

Distribution

- Content will be released under the GFDL (Gnu Free Documentation License):
 - All source code is available for free on the web
 - Allows free copying and distribution by anyone at any time
 - Allows FHSST to incorporate content freely from other GFDL sources without copyright issues
 - **Credit here is not important – getting the information out there IS!**

- Digital printing technology will allow:
 - Printing of the books with minimal formatting on the printing side
 - 252 page hard-cover bound book for R14 !
 - Print-on-demand will allow only the required number of books to be printed when needed – no inventory problems



How do we do it?

(3)

Our relationships with other organisations/groups will help to ensure success of the project:



Relationships/Partnerships

- The Shuttleworth Foundation tuXlab project has approached us:
 - FHSST content will be put in tuXlab schools in conjunction with Wikibooks in digital format starting January 2005
- University of Cape Town:
 - The Dean of Science has pledged his support
 - The UCT Education department has been involved in advising and editing content
- The SA Museum MindSpace project has already requested content as soon as it is ready



Help Needed...

Help is always needed to speed up delivery of the books...

People

- We still need volunteers to help finish the content writing:
 - Maths and chemistry are most urgent

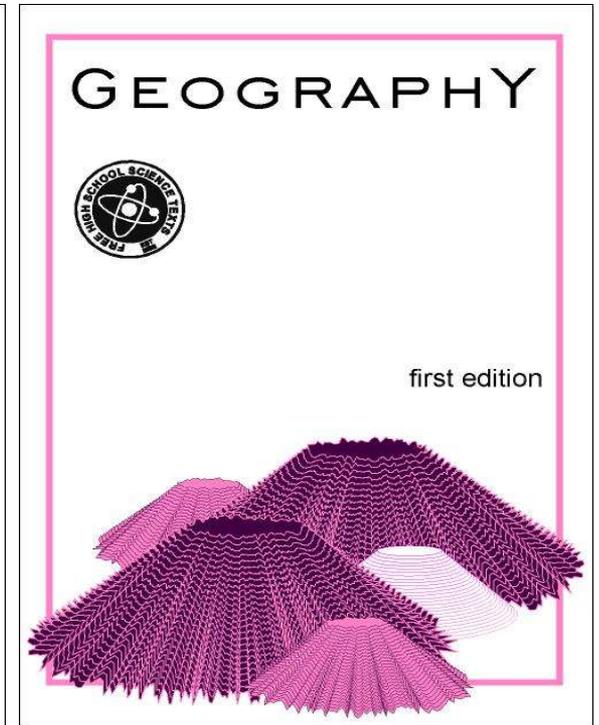
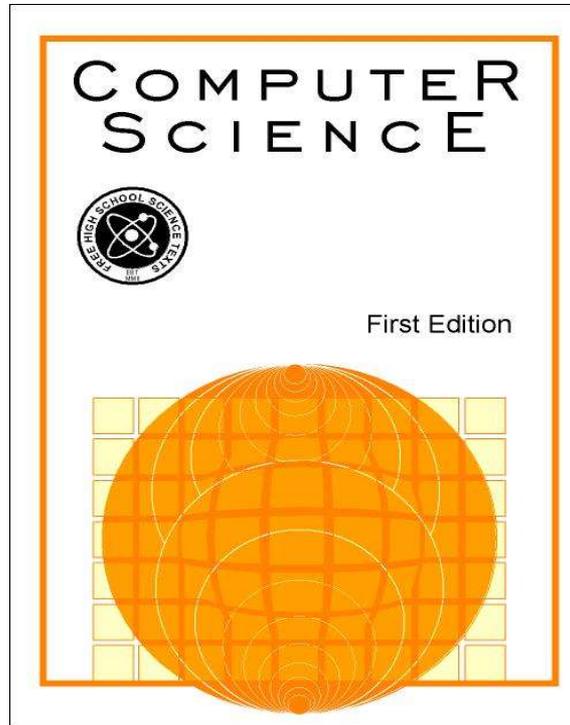
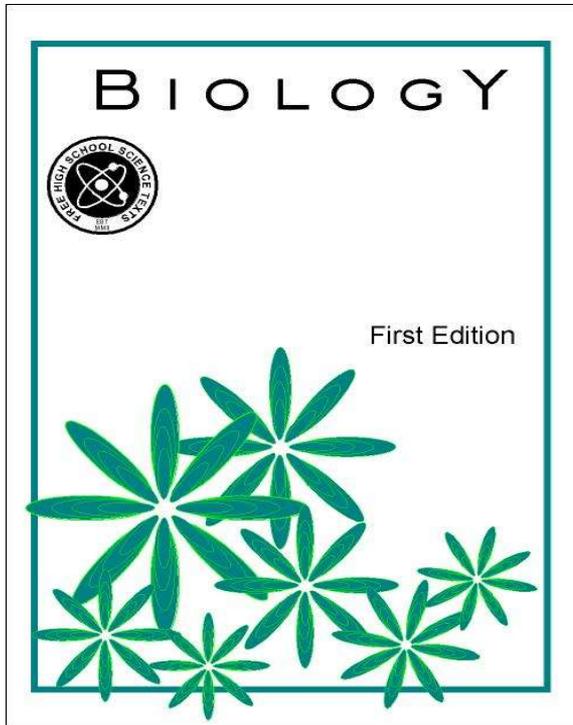
Funding

- Funds will be needed to enable editing by experts for outcomes-based criteria:
 - SDU at UCT
- The printing and distribution phase will require funding/sponsorship



Future...

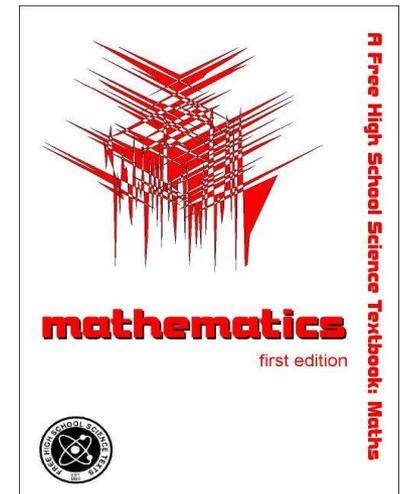
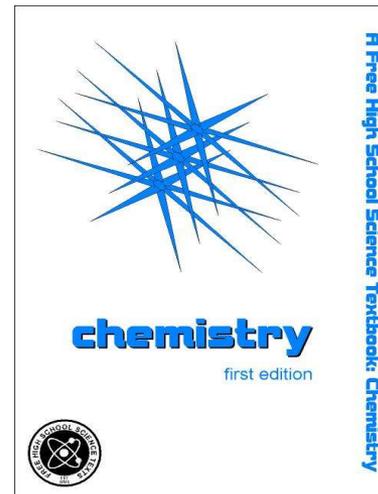
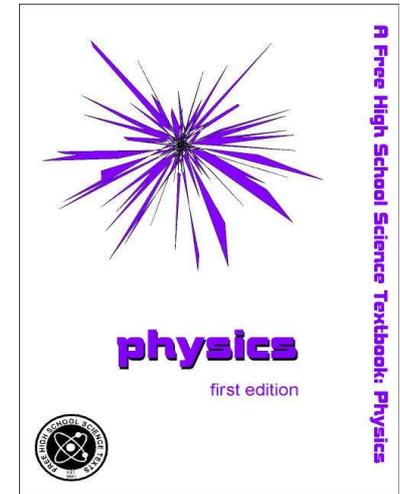
Based on the success of the first 3 books, we hope to follow a similar model to write and distribute further books...





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Extra Slides



Motivations

The motivations for the project are:

- There is a severe lack of educational resources in South Africa which needs to be addressed, especially in the area of the physical sciences⁽¹⁾
- Increasing all South African students' access to proper educational resources:
 - Ensures broader distribution of educated South Africans (doctors, scientists etc.)
 - Strengthens communities to ensure continuity and sustained development
- South Africa's national priorities of Science and Technology drive the need for improved resources at school level
- Decisive steps are imperative to improve the standard and scope of science education of school leavers in SA
- Science is crucial for the development of industry and technology:
 - South Africa needs to be self-sufficient

(1) S. van der Berg and R. Burger, The South African Journal of Economics. Vol. 71:3 September 2003.



Advantages to Stakeholders

The books (in both printed and digital format) will provide a number of advantages over current texts or lack thereof:

- Reduced costs
 - **~R20 per book (printed)**
 - **R0 per book (electronic)!**
 - Expand number of learners with science textbooks across SA

- Resource for teachers
 - Supplementary tutorials and examples

- Baseline for future projects



Benefits to Investors

Benefits to investors include brand exposure as well as financial and philanthropic spin-offs:

- Donations will allow prominent advertising of sponsor brand in books and on website
- FHSST in process of applying for donor-deductible status:
 - Tax benefits to investors
- At R20 per book, donations will have a broad impact on learners across SA