Interview with Leonard A. Plugge, SURF Scientific Technical Council

Leonard A. Plugge

◾ **SURF** is a Foundation in which all state-funded higher education (HE) and research institutions of the Netherlands contribute voluntarily. They fund SURF to exploit and improve a common advanced ICT infrastructure to realise their own ambitions and improve the quality of learning, teaching, and research. SURF has done this very successfully since its establishment in 1985. Currently, SURF is the proud father of two daughter companies: SURFnet and SURFdiensten.

SURFnet operates and continuously improves one of the world's most advanced hybrid networks, SURFnet6, with over 750,000 users. SURFdiensten offers services and products through so-called SURF licences for software, digital (academic) journals, and services from consultancy firms and for hosting and training. Recently, they have even offered a licence to stream or download music. SURF is recognised by the Dutch government as the country's leading HE ICT organisation. As such, the Dutch government provides SURF with grants to support the joint HE effort to innovate in the use of ICT in education and research.

↗ About Leonard A. Plugge

◾ **OEB: What are the main activities of SURF's "The Scientific Technical Council" and what is your role there?**

LP: The main function of the Scientific Technical Council, Wetenschappelijk Technische Raad in Dutch, or WTR, is to provide the board of SURF with advice on strategic matters. For example, every four years the WTR evaluates whether SURF still has a mission to accomplish for the next four years. This results in an advice report to the board on the main topics for the years to come. But that is not all. The WTR also provides advice on calls for proposals and performs the subsequent assessment of the proposals submitted. The WTR also publishes a Trend Report every four years on the expected ICT developments that may impact education, research, and the supporting organisation.

Finally, an essential task of the WTR is to support the individual HE institutions in their use and organisation of ICT by providing advice or performing audits.

The WTR consists of experts from different fields, but all are centred on ICT. These experts all work outside SURF, and my task is to act as the spider in the web and to make optimal use of their expertise for the benefit of SURF, its daughters, and its members.

■ **OEB: It is claimed that our traditional education systems and teaching methods can no longer provide adequate education and training to prepare individuals and organisations for the challenges of the globalised world. How can or how should education research help to face these challenges?**

LP: Our society has become more dynamic over the past few decades. The world my children live in changes much more rapidly than when my grandmother was a child. Education is about passing on knowledge from one generation to the next. However, in a dynamic society, knowledge becomes outdated faster. This is also true for the knowledge of educators. Teachers are trained with today's knowledge, methods, and technology for a future job in which they have to prepare youngsters for an even more distant future job.

Research is there to help us advance our fundamental and practical knowledge.

Consequently, education research should help educators to keep their knowledge and practices up to date, and educators should be aware that their knowledge and practices are decaying steadily. However, new developments from education research are not always warmly welcomed because they disrupt the educator's routine and self-confidence. Educators are professionals, and it takes them years to get their degrees. The degree itself suggests that they have finished their educations and no longer have to improve their skills and knowledge. But even if educators wish to improve themselves, they are not usually given sufficient time to learn *and* to try out new approaches or knowledge. And last but not least, there is hardly any substantial *market pull* to change all that. For that matter: do we know what constitutes a *market* in education?

Research should help faculty to adapt to the changing world, and it does. However, it also has an insufficiently sharp eye for the real demands in education, i.e., research does not provide a *coherent supply push*.

However, as shown before, research is only part of the problem. The other part lies in the *lack* of *sufficient and coherent innovation pull* from the educators, the institutions, the students, their parents, and the employers. As long as this unclear situation continuous, educational innovation will remain an ad hoc activity that relies on the willingness of individual educators.

■ **OEB: We apply the same attributes to the field of education as to businesses. We talk about the education 'market', 'branch' or even 'industry'. However the field does not seem to follow the same rules as other businesses, e. g. the law of supply and demand. The demand is there, but educational innovation seems complicated and takes a long time. What do you see as the main reasons for this?**

LP: The problem starts with the fact that education is not a standard product and therefore does not follow the exact same rules. Education as a product involves people as its main object. Therefore, education is a service, meaning that the customer is also 'the product'.
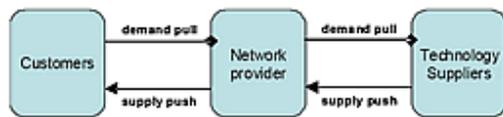

Figure 1: Actors, demand pull and supply
push in computer network provision and innovation

However, we can still learn a lot from the industry and the 'product view'.

Industry has learned a lot over the past decades about customer satisfaction and innovation. In industry, the links between the actors involved in development, production, and marketing are relatively clear. This is illustrated in Figure 1 about the development of computer network innovation.[1]

However in education, not all the customers are neatly situated in the left box of Figure 1. For example, the students and the government are also part of the centre box in education, and there is not a clear supplier as on the right in Figure 1. Researchers participate in the provision of education, which is also the object of their research. In summary, education is not (yet) a clear 'production chain' with clearly defined products, providers, customers, and suppliers. Lots of people and organizations are pulling and pushing, but the direction is not clear.

To worsen this situation, education research itself does not progress in a very straightforward way when compared to technological progress.

Research is about standing on the shoulders of giants, or at the least: building on previous findings. IT does this successfully. The production of integrated chips has Moore's law: the observation that the transistor density of integrated circuits doubles every 24 months. The storage law states that disk storage capacity doubles every twelve months. Network capacity increases even faster. According to Gilder's Law, network bandwidth doubles every nine months. Our network, SURFnet6, is a vivid example of this law. (See Figure 2.)
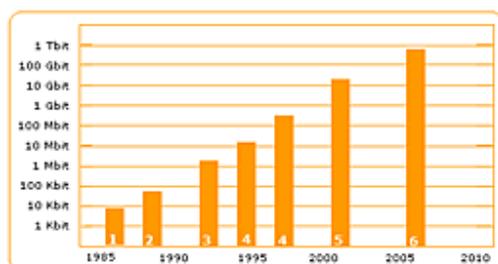
Figure 2: The transport capacity of SURFnet1
up to the current SURFnet6 on a logarithmic
scale

Does education research progress in a similar way? I do not think so. On the contrary, education research seems to start all over where others stopped decades ago; for example, education as the social construction of knowledge, derived from Vygotski and Galperin. Since then, this subject of education research has not progressed very much.

Two other examples are project-based education from the sixties, and currently, competency-based education seems to be the solution, or should I say 'trend'? Where's the progress?

Education anno 2006 is different from 1926 and 1966, but can we show that it is better? What parameters should we use?

Complaints about the results of education are still very much with us. For example, in the Netherlands we cope with the problem that fifty percent of the students at the teachers' training college fail the national (basic) arithmetic test.

We change the form and some of the content of our education regularly, but is it getting progressively better? I am not convinced that it is, because there is no standard by which to measure the progress.

■ OEB: What could research policy do to support these change processes? Is European research policy still adequate for the situation?

LP: First of all, this is not a European problem. It is a research problem on the one hand, and a problem of unclear demand and supply, pull and push, on the other.

So, what should be done?

Well, one thing is clear: education research must change and learn to build on previous results to achieve progress. The question of course is how to do this. I do not pretend to have the answer, but it might help if education research would set itself clear goals based on measurable parameters. For example: how can we decrease the dropout rate every year by, say, ten percent? How can we increase the influx of HE students by X% each year? How can we increase the effectiveness of faculty in supporting students, e.g., by reducing their time investment with equal student results? I am open to suggestions for goals than can be better operationalised.

I believe that education research must pay more attention to the review of the results it has achieved so far and build up evidence on what works and what doesn't. Do not rush over to a classroom after every positive trial in the lab. If you do, the teaching staff will get weary: yet another 'innovation'. An often-heard complaint from educators is that many of these 'innovations' come from people who have no understanding of the teachers' real problems. I think education research must act more as a *supplier* who

listens to its customers - push, but also respond more to demand - pull. Listen to the problems of your customers, let them pull, and work on solutions with them. In this respect, education research can learn a lot from industry.

OEB: Mr. Plugge, thank you very much indeed for sharing your thoughts.

Links:

www.surf.nl

[Dr. Leonard A. Plugge is speaking on Friday, December 1, in the plenary at 9:30 hrs.](#)

SURF, in cooperation with the Joint Information Systems Committee (JISC), UK, is giving an overview of open access approaches by their institutions in a pre-conference workshop on Wednesday, November 29. To find our more, please check workshop 18 at http://www.online-educa.com/?a=1&b=4&c=3.

[1] Translated and adapted from Van Iersel, F. and Neggers K., Innovatie bekeken / bekeken innovatie, SURFnet, 2006.