

Multimedia systems and digital media are becoming increasingly important throughout the world. There is also a shortage of people who are educated and trained to develop, design, and implement these systems. Today's computer interfaces are designed in a much more visual and intuitive manner, so the skills involved in creating software applications have expanded from traditional programming to include creative skills, such as graphic design and writing interactive narratives. Education of graduates who are joining the information technology industry must now address the need for these new multi-disciplinary skills.

This panel discusses these problems and issues in both academia and industry in Sweden, including: the convergence of traditional computer science students with traditional artists, obtaining qualified staff, and how industry is working together with academia in solving these problems. We also look at how to introduce university graduates to industry. We examine some of the industry-education problems caused by the structure of the Swedish education system and propose some possible solutions. We hope that by airing these issues for discussion, both industry and academia can understand each other better, locally and internationally, and pursue the solutions that are presented.

One of the problems that we encounter is the need to focus on communication, not the computer: the need to provide communication that connects people, companies, schools, and clients. University and industry need to collaborate to solve these problems.

Topics for discussion:

- Universities traditionally tend to focus on the process of learning, while companies look at the end product. What is better for the student?

- Students seem to want to learn products rather than theory. Why is this good and bad?
- Current trends in the Swedish industrial sector and how both industry and academia are responding.
- What is the balance between theory and practice? What sort of practice is needed?
- How do you mix the artist and the programmer? How do you train both?
- Digital media companies are often involved in strong group projects that require highly developed communication, management, and organization. Should these skills be taught at the university level?



Figure 1 Student work at Commando Royale. (Student - Mikael Håkansson, UCGS-KP96)

Mark Ollila

Mark Ollila is actively involved with the digital media industry in Sweden through his role in the Creative Programming Program at the University-College of Gävle and his position as a SIGGRAPH representative. He has always been interested in 3D and computer graphics as a hobby, but in recent years these activities have become a full-time career.

The Creative Programming Program, which began in the autumn of 1995, is

unique in its approach to selecting students and in the teaching environment it provides. There is a huge emphasis on quality and creativity, which attracts a wide range of students from different cultures. The course looks at both technical and aesthetic issues involved in today's digital media. With a strong emphasis on theory combined with industry involvement, it keeps students up to date. The student selection process is quite stringent. A jury reviews initial applications and invites candidates for interviews, which generally involve examination of the applicants' analytical and logical abilities, creative abilities, computer skills, and evidence of a creative mind.

Creativity is the most important criterion: the ability to look at a problem and solve it in different ways. For this, theory is very important. It will always going be the same, as the software and hardware change. Issues in Swedish education all boil down to not having the resources to find good quality digital media instructors. Unless the industry gets more actively involved in education of students, Sweden will find itself with thousands of digital media artists with no industry-quality skills at all. Everyone can learn to use a word processor, but that does not make everyone a novelist. The same principle should be applied to animation and digital media. Universities and industry must initiate better communication and understanding of what they need and can deliver.

Another issue in education is the government's approach to funding. Education officials decide that a field such as science is worth a certain investment per student without examining the real differences in educational requirements between chemistry, physics, and multimedia. Also, they don't consider the fact that the

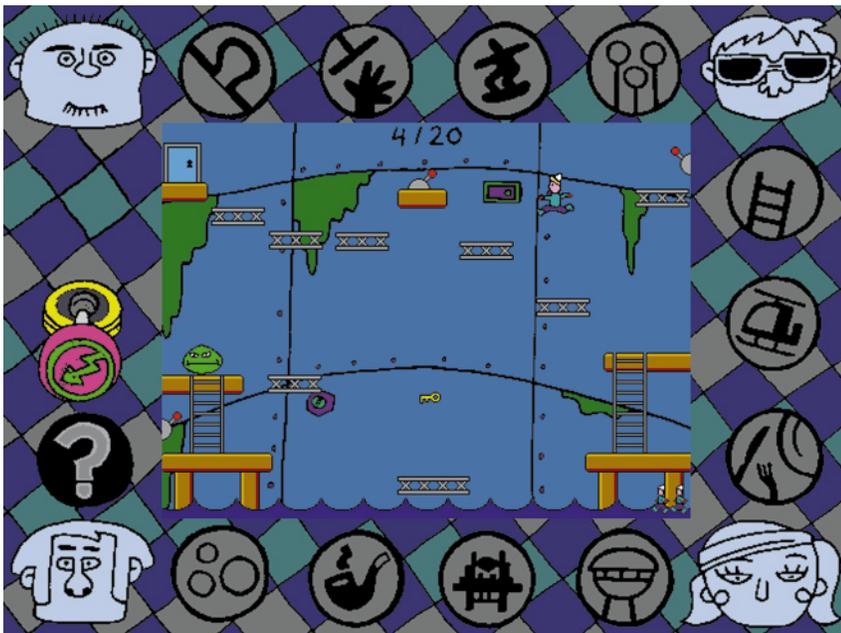


Figure 2 Student work at Silverfish. (Student - Niklas Konstenius, UCGS-KP95)

multimedia industry is growing 400 percent per year, so we need courses to provide the jobs. What about the quality? Imagine if this principle was applied to medicine: "We need doctors. You, you, you, and you shall now teach medicine." When does a computer science teacher become a computer animation teacher?

How much is one quality student worth to industry compared to 10 average students? It is time to get industry off its pedestal, and get it more involved with the education system by sponsoring students and schools, participating in courses, and offering internships, rather than criticizing universities for delivering below-par students. On the other side, the government and the universities must decide which level of "quality" they are addressing and what sort of end result are they really looking for. Is it a question of education for the masses or education for those who want to be employed? Are we

educating people for jobs, or educating them in the ability to think and learn?

Joakim Kempff

Joakim Kempff is managing director of Commando Royale, a new special effects company for TV and film. Commando Royale is the largest 3D modeling and animation house in Scandinavia.

The present problem for digital media companies in Sweden is that there is going to be huge market growth in the coming years but not enough skilled people to deal with it. The big problem is to find creative people who can deal with problem solving (illustrators communicating with programmers, for example).

This indicates that the different cultures need new structures. Who is to educate the student: the university or the company? Today, companies and universities are two different cultures, with different structures and hierarchies. In the future, they have to be

more the same. One big problem is that students want to learn the software rather than focusing on problem solving. As the software changes rapidly, the student is outdated. For example, a person who knew Alias three years ago would have to know the whole film industry today to be able to compete for the same job.

Problems also exist between the two cultures in research. Universities, because they have the time and money to experiment, can come up with solutions that generally will not be thought of at companies. Companies, on the other hand, have to be more efficient with their resources and may not be as adventurous in research. But the end result of the university research is ideally something that a company can use. How can we assure this end result?

Johan Ljungman

Johan Ljungman is the CEO of Silverfish Interactive Entertainment, a Projector New Media company based in Stockholm that conceptualizes and develops interactive entertainment, digital TV, online and CD-ROM games, and events.

I hear from art school students every day, asking to obtain work experience, telling me that advertising agencies have told them that they will not be let into the business unless they are already in the business. This causes inbreeding. How does the industry change? In Sweden, this business is like the pre-season players market, where every one is buying and selling players, and I am here waiting for the referee to blow the whistle so the game can start.

In Sweden, people are not usually employed based on their CVs, but on their creativity and social capacity. The fire and the hunger within the candi-

Where Industry and Academia Meet: An International Perspective



Figure 3 Student work at Commando Royale. (Student - Mikael Håkansson, UCGS-KP96)

"Learn Director and Lingo, and you will get a dream job." This is particularly true in the eight-week multimedia courses around the country. They may be good for project managers but not for producers. Graduates of these schools have average all-round skills, and are good at communicating with the people who have advanced skills. But for every 10 staff members, we only need one all-rounder.

The situation reminds me of the mid-80s desktop publishing boom, when new companies and university courses popped up. Now, people realize that it is not the tools, but the skills. At Silverfish, we only want people from the three or four quality institutions. The other 100 universities are generally producing students of lower quality. Also, "multimedia" and "information technology" are stupid words. They're too broad. What is a multimedia degree? A multimedia degree from one university is totally different from another university's multimedia degree.

date are of major importance, and that's where universities and industry often differ. The university stresses the CV. Industry looks at experience. I also want to point out that I don't want to be the boss. I want a team, where everyone can think, take initiative. I don't want to be the suit. I want creativity and the knowledge that anyone in the team is capable of leading the company. But that leads us to the question: what is more important, the programmer or the artist? I want a creative programmer. A year ago I wanted a programming artist. Which one is better?

Today, the government is funding hundreds and hundreds of poorly prepared, understaffed courses in multimedia. How is the school going to pay for quality teachers when industry is struggling to find qualified staff? The government is also fooling kids by saying:

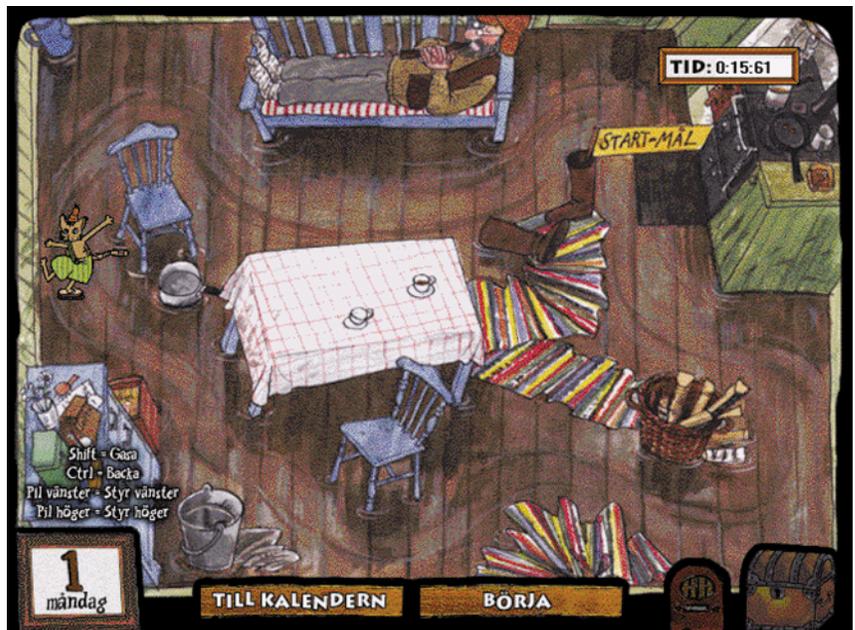


Figure 4 Student work at Silverfish. (Student - Johan Sundblad, UCGS-KP96)