

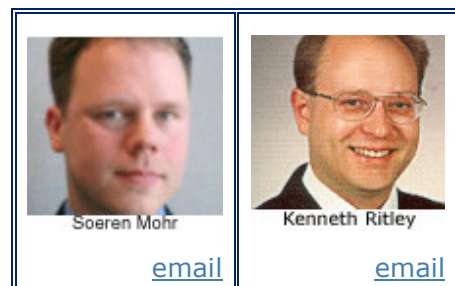
hps consulting and integration

knowledge brief

May 2003

Effective Use of Students in HPCI Projects

The specialty of our HP Consulting team in Germany is portals and content/knowledge management systems, and our projects generate yearly revenues numbering many millions of dollars. Occasionally, colleagues from around the world come to visit us. They expect to see high-powered consultants in suits and ties, with ears glued to cell phones, working with customers and negotiating mega-deals. Instead, what they see usually shocks them: a large HP-style room filled with desks, and behind those desks sit young students, ranging in age from 16 to 25 years. In fact, because we are often busy with customers, our student workforce sometimes outnumbers the consultants!



Students in the workplace aren't our only secret to success, but they play a very important role for our customers.

This Knowledge Brief discusses how we work effectively with students in our projects. We briefly discuss the student program at HP Germany, in the hope that HP in other countries can benefit and learn from it. We discuss how we have harnessed our student workforce to provide real benefits for our customers. Most importantly, we share our experiences with students, and we discuss "best practices" which we've garnered from several years' experience working with students.

What types of students are there?

Our workplace in Germany is filled with many types of students. This section discusses the types of students we have. More importantly, we discuss how each type of student can be used to best help our customers.

Apprentice

For many, the word apprentice conjures notions of Charles Dickens: the storefronts of guilds on 19th century cobblestone streets, the shops of butchers and bakers and candlestick makers, and therein the hard-working youngsters in candlelit settings who have been sold into an indentured profession by their poor parents.

In Germany, apprenticeships are not a relic of the past, but rather an important part of modern society. An apprenticeship is necessary in order to become a certified professional in nearly every trade, be it hairdresser or chimney sweep.

The apprentices begin their apprenticeship at the age of about 15 or 16, and the program lasts for up to 3.5 years. The program is a rigorous one, and it mixes classroom instruction with on-the-job training. At HP Germany, there are two types of apprenticeships which are offered: a hands-on computer technician and a more business-oriented, behind-the-desk computer professional. The program at HP in Germany currently trains about 270 apprentices.

The apprentices help us in extraordinary ways. Since our group concentrates on custom software development in the area of portals and document, content, and knowledge management, cutting-edge computer hardware and software technology is our stock in trade. We deal with languages such as Java and of course traditional languages like C/C++/MFC, Smalltalk, and VB, as well as just about every scripting language known to mankind. We deal with platforms, such as J2EE and .NET. Practically all of our projects involve connections to a database, be it the "standards" like MS SQL, Oracle, DB2, or the specialty databases like TransBase. And we deal extensively with commercial software packages, such as Documentum or Framemaker.

The apprentices have helped us with setting up new computer systems and repairing broken ones, installing operating systems, testing new software, and reproducing software bugs. A number of our projects involve support for Japanese customers, so that by the time they leave us, the apprentices become masters of installing operating systems in languages (like Japanese) that they cannot understand!

In short, the diversity of what we do allows us to offer super projects for students of all skill levels and backgrounds: hardware or software, programming or scripting, system administration or database development. And this diversity allows us to tailor those projects to the specific needs/wishes of the student.

One question that always comes up: do students have contact with customers? Our answer is this: students are just like any other HP employee in our team. When the need arises, and when it is appropriate, we have no qualms about having our most qualified students interact with customers. Indeed, our most outstanding and hard-working students can usually expect some contact with customers. This has ranged from dealing with customers when they visit us, to actually traveling to customer locations throughout Germany to help us support projects.

Intern

There are three basic types of colleges in Germany: *Berufsakademie*, *Fachhochschule*, and *Universität*. Therefore, there are three types of Internships, depending upon which school the students come from: BA, FH, and Uni. The students alternate between blocks or semesters of study, and internships with companies. Our interns are some of our most prized resources: they are knowledgeable, hardworking, and they are always ready and eager to take up new challenges and help us to help our customers.

Work Student

A work student is much like a workhorse, although no denigration is intended! These are students who are busy completing programs in computer science at schools or universities, and they come to us to polish their skills and earn money for their education.

Usually, the work students are already experts in some field: since our work mainly involves custom software engineering, our work students are usually masters of a programming language, such as C++/MFC.

We put their talent to good use in helping customers. For projects that might otherwise require subcontractors, we often use work students: they're less expensive, and because they work with us, the quality of their work is usually much higher.

Furthermore, our experience has shown there are almost no projects that are beyond the capacity of work students. They are a talented and highly motivated bunch, and no matter what the customer's goal is, or what the customer needs, they always rise to the challenge and succeed. The customer wins, and that's why we are here.

Diploma Student

In Germany, a Diplom is not what you get when you graduate from high school. Rather, a Diplom is an honor bestowed upon a student when they first complete a college-level education, and subsequently complete a college-level "senior project" – a formal research dissertation, which can last from 4 months to 1 year. After they earn their Diplom, they have the right, in Germany to use a special title with their name, much like a doctor or a lawyer in the U.S.; for example,

Frau Dipl.-Ing. Marta Mustermann

Herr Dipl.-Inform. Martin Mustermann

At HP, our group has a reputation for helping our Diplom students to produce outstanding research results, and we have used their hard work to good effect in helping our customers. Here are a few examples of how our customers have benefited from this:

XML Topic Maps. Under the guidance of one of our consultants, Dr. Oliver Bonten, Diplom student, Mario Klessner, investigated whether XML Topic Maps could help the pharmaceutical company Roche to better organize a content management system we developed for them. His results were so successful, they were presented at an international conference.

Content search strategies. Working with one of our consultants, Dr. Thomas Clemen, Diplom student, Dirk Kreibohm, researched and implemented a new strategy for optimized searches of an XML content management system for the German publishing company, Süddeutscher Verlag.

Embedded editorial systems in content management systems. The separate Diplom work of two students (Dirk Waldenmaier and Soeren Mohr) under the direction of our consultants, Oliver Jordan and Manfred Heinrichs, concerned new ways to integrate editorial systems with traditional content management software. Each dissertation was so spectacular, we used it for winning new deals with DaimlerChrysler AG and Heidelberger Druckmaschinen. And the students themselves were so spectacular, they have since gone on to become IT Consultants and members of our group!

Strategies for Success with Students

Our students work full-time, but they are not full-time employees. Treating them like full-time employees usually leads to failure. Students are a special group of people,

with special wants and needs, and they realize at the beginning that their time with us is limited. Therefore, having good strategies in place is important for ensuring student success.

The following is a list of best practices learned from many years' experience working with students. Note: the same general ideas are also valid for new employees, not just new students. However, because of the time constraints (students know in advance they will only spend a limited time with us) it is even more important to pay careful attention to detail, in order to start them off on the right foot.

The Student is King

If you view students as cheap "slave" labor, or as a resource for carrying out undesirable tasks, your efforts with students are doomed to fail. You'll quickly acquire a bad reputation, and deservedly so: you've contradicted the HP Way.

Working with students is a privilege. And like any privilege, it means you shoulder a hefty responsibility. The goal of student programs is primarily to benefit the student, while providing some benefit to HP at the same time. Therefore, having the student's desires and best interests in mind is essential for success.

Most importantly, it is important to treat the student with the same respect as you'd treat any other employee or customer – and to expect no less from them. They are not there to *serve* you – they are there to *learn from* you, and by treating the student experience as a privilege, and by treating the student with respect, you stand the best possible chance of reaping a useful benefit, while also helping the student.

The Interview

In the first hour of the first day that a new student steps into our workplace, we hold a formal meeting with the student. We talk for about a half hour about HPS Consulting & Integration: who we are, who our customers are, and how we earn profit for HP by working with customers.

We then turn to the student, and we learn about him or her. What are their goals? Are there specific technical issues the student wishes to learn?

We next discuss our goals with the student. These depend strongly on the type of student we have. Clearly, there are always technical goals – these form the basis for the tasks we assign to the students.

But more importantly, we always set some non-technical goals as well. In the case of apprentices, we want the apprentice to learn something about how we work as Consultants for HPS Consulting & Integration: our business processes and customer portfolio, how we acquire new deals/customers and how we work for the customer. In the case of more advanced "Diploma" students, there are clearly various theoretical issues to be addressed; these will form the basis of the student's dissertation.

The First Week

A general rule of thumb: the work experience in the first week is how the whole experience will work out.

During the first week, we try to spend as much time with the student as possible. In the case of apprentices, we walk them through the various tasks we'll be having them perform. In the case of "Diplom" students and others, we meet at least two or three times a day, to check their progress and ensure things are running smoothly.

Experience has taught us that if we spend more time working with the students in the first week, we'll spend less time throughout the course of their stay with us.

If you train more than one student or apprentice at a time, we *strongly* recommend separating them so they do not work together. It is good to separate them in two ways: first, give them different tasks, so you can check their individual progress. Second, separate them physically in order to limit their communication so they can concentrate on their work. Remember this: an important point is to give them as much real-world experience as possible.

While it may seem like a time-saver, having groups of students working together hinders this goal.

The Final Interview

We hold a one-on-one meeting with each of the students just before they leave. This interview is ostensibly for their benefit, not ours. (At this point, we've already instructed them to leave us copies of their notes, documents they written, etc.) In the interview, we review what the goals were, what the tasks were, what they've accomplished and what they've left open.

We try very hard to emphasize the *positive* things they've done, so as to always leave the student feeling good. However, we never hide the problems that have arisen. If problems have developed, we feel it is a disservice to the student to hide these problems. We openly address the problems and we encourage the students to decide what they could have done differently to avoid those problems.

Interestingly, the final interview is as much for our benefit, as Consultants, as it is for the students' benefit. It forces us to take time from our busy schedules, to think about what's happened and what we've gained from the experience, and to think about how we'd plan to do things differently next time, to further improve the student experience and, ultimately, our customers.

Will it work for you?

Having highly motivated students is the key to success. In Germany, we have highly motivated students. A series of official internships is prerequisite for graduating or landing a good job. This is an important point to keep in mind if you're contemplating working with students.

At HP in Germany there is a terrific website that explains the programs, and encourages students to apply:

- <http://hpbbedab.bbn.hp.com/index.htm>.

Particularly noteworthy is a database that HP runs for full-time employees: if we are interested in working with students, we can describe our projects and our work, and interested students can see what we have to offer. This is an outstanding resource.

Summary

Students are a young, hard-working and enthusiastic component of our work force in Germany. In our group at HPS Consulting & Integration, we use this talent and energy to good effect, to do important things for our customers, and to generate revenue and profit for HP. However, working with students is a privilege, and success with students depends upon never forgetting this fact. With smart strategies and a bit of hard work, the benefits of working with students are enormous.

Acknowledgement

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