

Chemistry Chat

Encouragement of Research (Part 3)

– Instruction of Students –

Nagatoshi Nishiwaki

School of Environmental Science and Engineering, Kochi University of Technology

A university is an educational institution before it is a research institution. The most exciting part of a university education is the laboratory education. The laboratory is a place where one can acquire the wisdom to use the knowledge learned sitting in a lecture room. In other words, laboratory education is a way to comprehensively acquire various abilities through research instruction, and these abilities can never be acquired through lectures.

Barrier

When I instruct my students, I sometimes feel the age barrier (and I am sure the same is true for those who advise young employees at companies). I have instructed students in the same way every year, but what is not the same is that the age gap between the students and me widens year by year. Even though I try to have honest conversations with the students as I did when I was younger, I often find that the students distance themselves from me. Recently, I strongly feel that this is the generation gap. When I think that my supervisors must have felt the same way when I was a student, I feel regret that I should have been a little more lenient.

As I was born and grew up in the Kansai area of Japan, I want to entertain people by making a joke, and sometimes I do stupid things in front of students. However, students often do not respond to them. If

you think about it, it is natural that they cannot laugh unconditionally when an old man, who is older than their parents, suddenly makes a joke in front of them, so they just look at me with a vague expression. However, I would like to strongly state that “both chemists and Kansai people dislike **No Reaction**”.

During research, all trials sometimes do not go well. This is what is called a situation of coming up against a brick wall. However, in recent years, I feel that the percentage of students who persistently try to overcome these obstacles has been decreasing, and easily say "I can't do it anymore" after a few failures. In my opinion, male students seem to give up earlier than female students. Basically, research is something that does not go well. I always want to forge the weak **mettle** of students to be as hard as **metal**.

Education

In theoretical fields, it is possible to divide a research theme into two parts, one for yourself and one for your students. However, this is not the case in experimental fields, because we give students a research theme and we compile their data into a paper. In the field of synthetic chemistry, it is possible to say that the faculty members provide the **strategy**, and the students work as the military **strength**. Some people may think that students are disadvantaged by providing labor power, but this is not true. Faculty members educate students and make sure that they acquire knowledge and experience so that they will not be stranded when they enter society. In other words, those who are not doing research are often (but not all) not doing education either. Indeed, with a half-hearted education, students can only do sloppy experiments and thus cannot get satisfactory results, and consequently

cannot write good papers. Since I know this boomerang-like scheme, I try to educate my students as much as possible without cutting corners. However, students do not always take it that way, so it is difficult to be neither too harsh nor too lenient.

Some faculty members treat students like pawns in a game of chess and get angry if students do not act as they want. Such laboratories may be able to make progress in research, but they are likely to produce people who wait for instructions and cannot act on their own initiative. I do not think it can be called an educational institution.

It is easy to simply teach knowledge. It is also easy to answer students' questions when they come. However, it is very difficult to wait for students to come and ask questions of their own volition. In a word, "**education is patience**".

Author Information



Professor Nagatoshi Nishiwaki received a Ph.D. in 1991 from Osaka University. He worked in Professor Ariga's group in the Department of Chemistry, Osaka Kyoiku University, as an assistant professor (1991-2000) and associate professor (2001-2008). From 2000 to 2001, he was with Karl Anker Jørgensen's group at Århus (Aarhus) University in Denmark. He worked at the Center for Collaborative Research, Anan National College of Technology as an associate professor from 2008 to 2009. Then, he moved to the School of Environmental Science and Engineering, Kochi University of Technology in 2009, where he has been a professor since 2011. His research interests comprise synthetic organic chemistry using nitro compounds, heterocycles (synthesis, ring transformation, 1,3-dipolar cycloaddition, application as tools in organic synthesis), pseudo-intramolecular reactions.