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the world is changing

The world has changed over the last 20 years, We have cell phones, we can communicate through skype; we have Spotify and almost everywhere access to wireless networks, and Google and Wikipedia are part of our daily life and we know the power of social media.

On a macro level, we see an intensification of world trade leading to quite a few shifts in agricultural practices in certain countries: S. America grows more soybeans than before and in Asia we see an extended palm oil production. To feed the ever growing world population we realized a huge increase in food production.

But also on farm level a lot has changed and is still changing. Hand milking replaced by robot milking and man ploughing replaced by automated distant ploughing on GPS.

At farm level we see now a shift from quantity towards quality, and a shift from production driven agriculture to a customer driven agriculture. New horticulture products are marketed because there is a consumer demand. And in animal production we see a shift from the quality aspect animal welfare towards sustainable production in terms of low Carbon dioxide emission and Live Cycle Assessments.

And in the meantime automation will continue and the decrease of the number of people working in primary agricultural production will continue. We see those jobs disappearing for which a medium level vocational diploma/degree was required, and on the labour market a higher demand for low skilled labour and highly educated professionals.

Nobody expects that these changes have come to an end. In contrary, we expect that the speed of encountering new changes will accelerate.

Educational institutes are well used to follow the changes in society and in the world of work. We are aware of our mission to prepare young people that are socially skilled for their functioning in society and prepare them for the labour market so they can earn their own income

But how to cope with all these changes and how to prepare the young people for their future?

Let's look at some developments which are of educational interest and start with the role of knowledge.

KNOWLEDGE

Using agricultural terms, I describe knowledge as a perishable good. For the past decades we have seen that the best before date of knowledge becomes shorter and shorter. I give, three reasons for this:

PICTURE

First, we see that in our flexible, dynamic society the knowledge someone needs to execute his professional tasks is changing continuously. Every time the employee or worker needs new knowledge to complete his or her professional task.

It means that the knowledge learned in formal education is outdated rapidly and has to be replaced by new knowledge.

Second, we see that every year about 5% of all functions disappear and 5% complete new functions are developed. It implies that new knowledge is needed to perform the tasks within these functions.

Third: people keep on changing jobs. They will not make promotion within one single company, but make a career by switching from one company to another. And every new job requires new knowledge.

Exactly the same happens in the primary agricultural production. New situations, new knowledge.

It means that in every single new situation the existing knowledge is no longer adequate and appropriate and you must develop new knowledge.

But how to deal with this problem in education?

IAE's are just like other educational institutes, organisations where we transfer knowledge from the teachers to the students.

(IAE = Institutes of Agricultural Education; here I mean: higher vocational education (Diploma, Bachelor/ Master)

PICTURE

How do we do this? (USB-stick). How many gigabyte can we put into a students' head? The head is full at 32 gigabytes or can we go up to 40?

If this is the idea of knowledge transmission, it's easy! Just give every student some memory sticks and we are ready. Close the schools.

You are laughing, but what else? What is knowledge?

We do not receive knowledge, we receive information and assess whether or not this information is useful and valuable. Only if it is valuable information, if you can achieve something with that information, this information is stored in the brains together with its purpose. It means that knowledge is a result of construction: information is connected with a useful purpose and stored. **So: knowledge is always developed in a practice, in a practical situation.**

You do not value information on your own. Valuing information also depends on the way your environment values this information. If everybody around you finds this information not done or useless, you will tend to have the same opinion and there is no need to store this information in your brains as you cannot attach it to a useful purpose. Thus, knowledge construction also is a social process. You do not develop knowledge on your own, but together with others in a particular context.

Except that knowledge is formed by appreciating and using information, we also develop knowledge through appreciating our experiences. This experiential knowledge is just as important as other knowledge. So, experiential knowledge is really constructing by doing.

But as I said before: the best before date of knowledge is rapidly becoming shorter and we need to renew our knowledge continuously.

Fortunately it's getting always easier to get information and there are increasing possibilities to create/construct knowledge. Everybody can create knowledge for his own situation by using all possible sources of information. This automatically leads to new experiential knowledge.

But if we know all this, then we need a different approach to acquiring knowledge, because knowledge is terribly important. It means that we have to train our students in knowledge construction rather than repeating information, sometimes even by head

And finally,

Except that we need a continuous knowledge construction process, using this knowledge has become more complex because one single person is no longer able to complete a professional task or achieve innovations. This means that knowledge in one person is not enough to get innovations. That means knowledge coalitions, innovation clusters; in short: collaboration and communication play a central role. It no longer comes down to the knowledge embodied in one person, but in the collective knowledge. Collectively doing something, and no individual will be held accountable for the final result but for his/her contribution to the whole.

SKILLS

It will be clear that the same applies to skills. Skills are subjected to wear and you have to continuously train your present skills. But apart from this, always learn new skills. It is an illusion to think that for the rest of your life, you can rely on the skills you have learned at school or IAE.

COMPETENCIES

Looking at this, then we have a serious problem.: knowledge is rapidly perishing, and you cannot expect much of the skills you possess now.

Fortunately. The world of work has recognised this issue and started to work with competencies. Education has accepted competencies as being used in the world of work and introduced competence based learning. Also because education prepares young people for the labour market. But the concept of competence is quite difficult to understand perhaps fuzzy. Not surprising as the concept knowledge is already quite difficult.

Let's have a look whether we can understand the concept of competence.

Pictures

I have a professional task that I have to complete in such a way that the result is accepted by my customer. To execute this professional task I have to mobilize all necessary knowledge and skills from my internal bookshelves. But I have to mobilize more. I have to execute this task with the right attitude, with the right motivation and based on my own values.

This personal quality, this capability to do the right things at the right moment in a specific context: that is what we call a competence. Competence as an independent capability that can be developed from lower level to higher level and can be shown in less or more complex situations.

The good thing about competencies is the fact that they are not showing signs of wear over the years.

Like we cannot directly measure knowledge levels, we cannot directly measure competence levels.

Where we assess knowledge levels by asking students to make a test, we measure competence levels by assessing the execution of professional tasks, so by performance.

That automatically makes Competence Based Learning a learning method that requires the execution of professional tasks in practice. And of course these students need to develop knowledge, skills, values and motivation, being independent attributes, as well.

The results of my research amongst students in several countries shows that students in the right competence based learning environment develop their competences to a higher level compared to students in a knowledge based learning environment. Above all, they maintain this higher competence level at least till three years after graduation.

CONCLUSION

We organised and provided for a long time good education to our people, but it should remain good education.

- We know that society, functions and professional tasks change quickly
- We know that Best before date of knowledge becomes shorter and shorter
- and that we have to construct new knowledge continuously by attaching value to information and by experiences
- Skills are perishing even faster
- We know that competencies sustain their value over time

So, it is our duty to change! That is exactly what is going on in many IAE around the world. I personally saw this in Ghana, Ethiopia, Mozambique and Indonesia. And because of the immense changes in agriculture you see that particularly IAE are taking the lead.

Also in this TACATI programme some ATI have shifted their curricula to Competence Based Learning. These curricula allow students to DO things. Students are challenged to prove they are competent. Others will inform you in more detail about TACATI project, the COLA's and CBL.

So, we found a new way for our IAE, and a lot has been achieved, but is this the final station? What do we expect from the IAE in the future? What is the road forward for Vocational Education and Training? And what will be the role of the IAE's?

The future

I will describe two futures.

Let's first have a look at somebody entering the labour market, PRESENTA. Presenta wants to start her own farm. Probably not at once because she needs some money to take over and become owner. After some years of ownership I think she is a real entrepreneur.

What do we see in the development of this young woman: the questions to be answered change: from what to do, to how to do it the best way and finally to why am I doing this? And this young woman will show a certain development. She is learning. And we know from our research that this learning will be done in different ways.

What we have seen in the past that after the formal learning in full time and part-time education, and perhaps dual learning, IAE stimulated the first learning after graduation by offering formal courses and perhaps even giving some additional certificates. But Presenta now quickly realises that the single fact of having certificates doesn't make you a better farmer. She needs answers on her specific questions. And she does not expect formal courses but expects partnership from the IAE in answering the questions.

Then we saw the study clubs, groups of farmer-owners, first established by cooperatives and stimulated by Government organisations. But Presenta will form her own study clubs or join others, and these study clubs are hiring expertise from outside to highlight a specific topic. Are the IAE ready to become the institute that will provide these experts?

And then we see the networks. Networks of learning communities where the entrepreneurs like Presenta communicate openly with each other, about the opportunities and threads, without any secrets about

the results of their enterprises. Probably they will still keep their innovations hidden for outsiders, but nowadays they will share their innovations with other networks, to make all networks stronger.

This is not the future, this is what happens now. What is the role of IAE's in the networks of farmer-entrepreneurs. Does your IAE participate in the learning communities?

Then: the student of the future.

Where are we going? Let's take somebody who was born two years ago and we call her Futura. Futura is a girl, two years old walking around somewhere, perhaps with her mother somewhere on the fields of between the cattle. When she is 17 she decides to come to an IAE, because she wants to be a farmer. It is 2030. She graduates and then she will work till she will retire when she is about 70, so around 2085.

How will this girl and women learn? How will she learn between 2030 and 2080?

We are convinced about the fact that Futura cannot rely for 45 years on what she will learn at the IAE around 2030.

So, what Futura has to do after graduation: get new knowledge and skills for the rest of her life, retrain herself, in other words: long life learning. The initiative to do so is in her own hands. She has to, to be able to participate in society and in the labour market.

And therefore we start this process of Long Life Learning at the moment she enrolls in the programme at an IAE in 2030. The educational programme of Futura will be entirely focussed on learning to learn, focussed on developing inventiveness and flexibility, focussed on the ability to properly deal with many different and new situations. Futura will learn to be creative, to see and seize opportunities. Futura is developing into a social and communicative woman.

Of course, the programme is competence based, and uses examples from the present labour market. and emphasis is given to the development of the more sustain capabilities of Futura: her values and her motivation.

How to discover your own values? How attach value to something and why? How to appreciate other persons' values? What are the values of the society. And what stimulates her motivation? And how to mobilize this motivation in new professional situations?

As the development of values and motivation takes time and because young people develop their identity between their 21st and 28th birthday, the educational programme offered to Futura will not take 2,3 or 4 years, but rather 9 or 10 years. So, she will graduate when she is around 28. Still more than 40 years to be active on the labour market.

And for sure: Futura needs knowledge and skills, but these are volatile, which means that there is not a standard programme at the IAE. Futura will follow her interests, and will find the necessary information.

During her studies at the IAE, Futura will frequently reflect on her achievements and learns to develop herself. And after some time she will reach a certain level, diploma or bachelor level and will get a certificate of competence.

And HOW will she develop herself towards the required competence level? Of courses: By doing. Completing the professional tasks that are given to her as a training. In an agricultural context, because there is her interest. And the way she will learn, in a modern version of the well known master apprentice principle, a direct link between learning and practice.

Modern version, because Futura will develop herself within networks, with all kinds of cooperations, communities of practice, multidisciplinary, exchanging and sharing information, co-creation of

knowledge. She will participate in learning communities with members from all around the country, perhaps even beyond the borders. And wherever she goes, she will stay in permanent contact with her coach from IAE. This lecturer and coach is the one with whom she will reflect, who stimulates her and helps giving direction. This lecturer gives feed-back and feed-forward.

Even more important are the discussions Futura will have with her colleague entrepreneurs, with her customers to jointly decide on the priorities, the valuable priorities. This will give her the opportunities to better know her own values and motivating factors.

And she will keep in touch with IAE and institutes of Higher Education till she will retire in 2085.

Conclusion

So, lady and gentlemen,
What we should NOT do: teach young people the past, educate young people with methods from the last millennium. It is our duty to lead the way.

It is difficult to predict the future . The one who knows can earn a fortune.
But we can make an educated guess. That is what I did here.

And my final question to you: when you agree with me, why waiting till 2030?

Thank you