

Beyond the educational zoo

Authentic learning and teaching in a green world

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Prologue: changing playgrounds

Over the last decade I have been able to talk to many teachers, parents, rural employers, students and other stakeholders in agricultural education and training. These conversations have learned me a few things about the character and quality of agricultural teaching and learning. Teachers are sometimes very confused about what and how they should teach. Students feel that teachers are not sufficiently able to connect to their way of life and their information needs. Some employers complain that graduates from our colleges cannot even hold a hammer whereas others say that graduates should learn more things about people than about subjects. It seems that we are a bit at a loss as concerns the way our teaching and learning should develop and evolve.

In this paper I will explore the changing playgrounds, both in the world of agricultural practice and in the education sector. I will analyse the positive and promising aspects of new ways of authentic learning and teaching. Authentic learning and teaching can only be successful if our teaching staff master a number of new and challenging competences. I will explore these competences and will then present some thoughts about the implications of authentic learning for teacher training.

Green world in motion

Our green world is in turmoil. There is a wealth of information on this issue but let me just give some examples:

- ❑ From agricultural to green and keen (changes in the sector)
The primary agricultural sector in our part of the world has shrunk dramatically over the past decades in terms of number of farm holdings and workplaces. The volume of production has stabilised, at least in our country. Those who have left agriculture have been looking for alternative sources of income. The surviving holdings have changed dramatically: they are bigger, and more capital and technology intensive. Some farm holders are specialising whereas others are diversifying their economic activities. In any case, they all require seriously adapted types of farm management (see e.g. Van den Bor, W., J.M. Bryden and A.M. Fuller, 1997). This calls for a different kind of agricultural education: it should at the same time become more general (green) and more specialised (keen).
- ❑ From farmer to rural superman (changes in competences)
Whether he likes it or not, the agricultural entrepreneur has transformed into some kind of rural superman, who not only produces milk or potatoes but whose pockets are filled with all kinds of new societal roles. He is a warden of nature, he is responsible for the quality of our food, he protects our cultural heritage, he is a host for those who want to taste both rural life and the

products of the farm and most of all, he has become a full fledged administrator. Agricultural education must adapt to those developments, together with the regional farming community. It is very important to look for more intensive integration of theory and practice in this respect.

□ From being taught to being tempted (changes in learning)

Ideas about how (young people) learn have changed dramatically. The essence of learning and the way learning should be supported can be summarised as follows:

- ✓ From reductionist rote learning to multi tasking
- ✓ From teaching to learning: the learner becomes active
- ✓ From knowledge transfer to facilitating: the teacher becomes a coach
- ✓ From group instruction to tailor made learning: catering for individual needs
- ✓ From a school based temporary learning route to lifelong learning: ongoing learning at the workplace
- ✓ From subject related learning to competence based learning: learning is based on real(istic) working conditions

The question is whether green education has been able to keep up with these changing conditions. Did it really develop into some art of temptation and seduction? Let us take a closer look.

The educational zoo

Over the last decades I have been able to spend quite some time in South Africa. During those visits I have seen wildlife in its natural habitat. Once you have experienced this, you refuse to set foot in a zoo anymore, however beautiful such an animal park has been laid out. I am afraid we have turned our education into a zoo where we have increasingly reduced and atomized real life into a watered-down version of the complexity and challenge of being human. The behaviour of the inhabitants of this educational zoo is not very much unlike that of the caged tiger: repetition, stress, boredom and, worse of all, extreme dependence on others.

It is an absolute blessing that, little by little, we come to realise that our green education and thus our schools and colleges need a rather serious paradigm shift (see e.g. Bräuer, M., 2004; Mulder, M. and others, 2003). Some call this a shift towards natural learning, others speak about new learning or authentic learning. All these changing approaches have roots in social constructivism as opposed to the logical positivism of the many decades gone by. In simple words, we have re-discovered that education should be about real life situations, about people and their destiny, about values and feelings. What are the essentials of this shift?

Box 1: A paradigm shift

Logical positivism	Social constructivism
Objective knowledge	Subjective knowledge
Knowledge transfer	Knowledge construction
Teaching	Learning
Useful	Meaningful
From part to whole	From whole to part
Achievements compared with average	Achievement compared with former achievement
Addressing two intelligences	Addressing multiple intelligences
System monitors learner achievements	Learner monitors own achievements
Focussed on reading and listening	Focussed on experiencing and explaining to others
Searching for what learner does not master	Searching for special talents of learner
Focussed on individual work	Focussed on learning together
Focussed on knowledge and skills	Focussed on competences
Knowledge is stored unconnected to context	There is no knowledge isolated from context
Instruction is mastery oriented	Learning is oriented toward construction/design

Subject matter is crucial	General development is important
The teacher selects subject matter and instructs	Teacher stimulates learning process as expert, trainer, coach, instructor, pilot and advisor in different combination of roles
Learning for later	Learning for now
Objective testing/assessment	Intersubjective testing/assessment

This list of developments is by no means complete. Worth mentioning are activities aimed at streamlining longer term learning trajectories, improving personal attention given to learners, realising systems of assessment and evaluation that are better tuned to real life situations and, last but not least, a much better cooperation between schools and the world of work. The thread that runs continuously through all these developments is the unavoidable and vitally necessary change in the societal role of the school as an institution.

Slowly but surely it becomes clearer that education and especially green vocational education cannot meet these new needs if it continues to promote classroom based instruction as we all experienced it for so many years. Instead, our green schools, colleges and training institutions have to open their gates, demolish their walls (so to speak), reach out to the world outside the school and embark on new routes of dual and practice oriented learning. In this presentation I choose to call this *authentic learning*.

Authentic learning in focus

To explain what we mean by authentic learning, we need a set of rather concise indicators or standards that can be used as a point of reference. If we look at the well known social-constructivist paradigm, as outlined in box 1, we can derive quite a substantial number of indicators. However, I prefer to keep things as simple as possible. Therefore, I present five questions which together, in my view, give a good indication of the authenticity of a learning activity. In a recent European EQUAL-project these indicators have proven to be of practical value (see e.g. Van den Bor, W., 2006 and Van den Bor, W. & E. Hönigsberger, 2008).

1. Is the activity based on what the learner wants to learn?

Is, in other words the learning activity, supply oriented, taken from a book or constructed by the teacher or the school? Or do we start by asking what the learner wants to learn, do we add to what he already knows, do we connect to what he finds interesting to learn? If we can answer this last question with 'yes', we are closer to authentic learning.

2. Does the learner learn according to his own learning style?

Every individual learns in his own way, as we know. There is an extensive literature on learning styles. It is very important that a learner can master new knowledge, skills or attitudes in his own preferred way. If we have paid due attention to this aspect in the learning arrangement, we come certainly closer to authentic learning.

3. Does the learner learn something that can be directly related to the world in which he lives?

This is a tricky one. We all have learned things that were important but could only much later be related to the real world. We would certainly have learned with more efficiency though, if someone could, at that moment, have given us an answer to the question: why do I have to learn this? Authentic learning is learning by experiencing. It is about the world around us and if it is not directly or immediately applicable, it can at least be related to the real world.

4. *Does the learner learn in a natural context?*

This relates to the role of practice in learning. Authentic learning takes place in situations where learning questions derive from practice or can be directly related to practice. This calls for dual learning: a good mix of theoretical and practical learning. Important is that the roots of learning can be found in the world around us. This means that the school should be transferred from a zoo to an open arena.

5. *Does the learner learn together with other learners?*

If authentic learning has to mirror real life, than it should take place in a social setting. Learning should be a co-operative activity. Working together, learning from each other, helping each other, sharing ideas and feelings; this is part and parcel of authentic learning.

Authentic learning does, however, not exist in some sort of 'pure and unpolluted' form. It is an ideal-type situation. In the learning situations and learning routes we are participating, we find ourselves on a continuum with on the one side straightforward logical and positivist thinking (which hardly exists) and on the other side an absolute social-constructivist way of personal development (which seems to be too idealistic and not realistic). If however we are aware of our position on this continuum and, more important, if we are willing to move towards creating more rewarding and authentic ways of socialising the young people who have chosen to spend some time with us, then we come closer to learning by living.

Authentic learning in practice

In our organisation (Educational Group North) we try very hard to bring authentic learning into practice. Especially within our green vocational colleges we have embarked on a route which must lead to competency based learning by the year 2010. These colleges have redefined and restructured their educational programs in such a way that there is a balance between the positive sides of 'old fashioned' classroom teaching and new ways of authentic learning and teaching. In this paper I present three examples of these authentic learning pilots. I will briefly evaluate these examples as far as their learning authenticity is concerned. Also I will look at the competences required from our teaching staff involved in these authentic learning situations. Then I will look into the important question: if authentic learning requires new and adapted competences from our teaching staff, what are the implications for teacher training in agriculture?

Box 2: Learning with the farmer (example A)

One of our agricultural colleges has made an agreement with six young cattle farmers not so far from the college. The farmers play an important role in providing practical training for our students. One of the farmers has taken the lead and he has built teaching facilities on his farm (classroom, toilets, et cetera). The students spend time on each of the six farms where they complete practical assignments in animal husbandry and farm management. The farmers act as teachers together with the teaching staff of the college and use their day to day working routines as learning situations. Part of the examination of the students is being carried out on one of the farms; the farmers do assess the results of these exams, together with external assessors. The farmers are paid by the college for the contact hours with the students. The college also pays a fair amount of rent for the teaching facilities on the farms and for the use of the farms as teaching environments.

Box 3: Managing training at a riding-school (example B)

Another agricultural college of our Education Group works closely together with a rural riding-school. The owner of the riding-school has built 40 horse boxes on his own account. These boxes are rented out to our students who follow the equestrian training program of the college. Next to the rent for boxes and classroom facilities, the college pays rent for the riding-school facilities. These students spend some 80% of their time on the riding school. The riding-school owner has also built classroom facilities which he rents out to the college. The students follow a program of 4 years. From their third year on the students are involved in the management of the program, including the day-to-day management, maintenance and tending of facilities and horses. They also play a modest teaching role as teaching assistants for the junior students. The students also organise occasional horse-shows and meetings for their parents and relatives. The students are coached by the teaching staff of the college. Part of the examination of the students is carried out at the riding-school.

Box 4: Sharing facilities with a veterinary hospital (example C)

One of our agricultural colleges offers a program to train veterinary assistants. In order to train these students as closely as possible to practical conditions, the college has hired facilities in a private veterinary hospital. Students are being taught in the hospital and they can make use of the animals that are being kept for observation or treatment in the hospital. As part of their training program they are allowed to attend to surgery and other kinds of medical animal care. The veterinary doctors and other personnel of the hospital participate in the training program. The college pays the rent for the facilities and pays for the teaching hours of the hospital personnel.

If we examine these pilots with regard to the level of authenticity as defined above, we can conclude as follows:

- Generally speaking the activities being carried out in each of the three pilots are connected to what students want to learn. The teaching activities add to what students already know and to their world of interest. Yet, they are still supply oriented and organised by the college.
- Learning in these pilots is as much as possible tuned to individual learning needs of students. On the other hand it is not yet directed towards individual learning styles. Instruction is carried out in small learning groups and assignments are not yet tuned to individual learning preferences.
- The students all know quite well what they are learning and why it is important for them. Learning can be directly related to real world conditions. Students learn by personal experience.
- The students learn very much in a natural context: the context of the business of running a farm, a riding school or a vet's clinic. There is good mix of practical and theoretical learning with roots in the real world around us.
- Students also learn together with other students in small groups. Assignments are formulated in such a way that students cannot do the job alone. They need each other in e.g. managing part of the riding school, implementing a feeding program for cattle or preparing surgery for a pet animal.

In conclusion, it is fair to say that these learning pilots have a rather substantial quality. They are little pearls in our educational crown but we have to realise that it is not so easy to broaden this didactical approach to the mainstream of teaching in our colleges. This way of teaching is rather expensive, to start with. Also, it is time consuming and it demands very good preparation, monitoring and communication between the college and those who offer their facilities. In the context of this paper I will give special attention to another challenge, however, namely the competences required from the college staff participating in these new ways of authentic learning.

Square pegs in round holes?

The question is: do our agricultural college teachers have the right competences to act adequately as resource persons and coaches in authentic learning? To answer this question we need to know what kind of competences our teachers should master under these evolving educational conditions.

The Foundation for the Quality of Teachers in The Netherlands has developed a portfolio of competences for teachers, based on the different roles they have to play in different educational contexts. In my view this portfolio is rather complete and can be used to critically evaluate the professional quality required of teaching in authentic learning conditions. The foundation distinguishes seven main competences.

1. *Interpersonal competences*: guiding students and making sure that there is a good relationship with and between students.
2. *Pedagogical competences*: providing a safe learning environment and stimulating personal, social and moral development.
3. *Subject-related and didactical competences*: providing a strong learning environment and stimulating the process of learning.
4. *Organisational competences*: taking care of an orderly, clear and task oriented atmosphere and structure within the learning environment.
5. *Teamwork competences*: tuning ones tasks to those of colleagues and contributing to running the school organisation properly.
6. *Competences directed to proper cooperation with external stakeholders*: having good relationships with parents, the neighbourhood, and the world of work.
7. *Competences with regard to reflection and personal development*: taking care of ones own professional growth and the professional quality needed in the teaching process.

It is not so difficult to see that authentic learning processes as outlined above demand a combination of all seven main competences mentioned. It is also fair to say that a rather substantial part of the present teaching staff in our agricultural schools and colleges do not (sufficiently) master this highly needed combination of competences. Especially our elderly teachers who have university degrees have difficulty in meeting these professional needs. This is not to disqualify them; many of them were and are excellent teachers and trainers under logical positivist teaching conditions as described in box 1 above. When it comes to playing teaching roles in authentic learning situations, however, many of them experience, consciously or unconsciously, serious shortcomings in their professional toolkit. Generally speaking, young and starting teachers are trained differently if they were lucky enough to be trained at an institution which tuned its programs to new professional demands and standards. Unfortunately this is not true for all starting teachers as we experience every year in our colleges.

If there is some truth in my analysis so far -and I think there is- what are the implications of the paradigm shift in learning and teaching for our institutions for teacher training?

The demand for multiple intelligences

Looking at the new educational realities in my institution I conclude that all seven main competences mentioned above are absolutely necessary for any teacher who takes his profession seriously. I must also admit, partly from my own experience in teacher training, that until recently teacher training for agriculture was focussing mainly on competencies 3 and 4 (subject-related and didactical competences, and organisational competences). There is no doubt that these are and will continue to be of great importance for every teacher. In addition, however, authentic education demands from teacher training institutions that they concentrate much more on the other five main competences. More specifically, teacher training for agricultural education should focus on the following:

Re interpersonal competences: providing a learning context inside and outside the school where young people feel at home, not only because they can meet their friends there but also because they are confronted with problems and realities that are related to their feelings, personal questions, specific fields of interest and future work aspirations. This demands from teachers that they know how their students collect, select, share and manage information. This means for example that teachers are, at least partly, familiar with gaming and the way young people communicate digitally. There is already a rapidly growing number of interesting studies and publications in this domain (see e.g. Tiene and Ingram, 2001; Tapscott, 1998; Palloff and Pratt, 2001). Most teachers and instructors, though, are still complete strangers in the digital Jerusalem of their students.

Re Pedagogical competences: over the last decades the pedagogical task of training and schooling has been neglected. Personal, social and moral development was considered to be the realm of parents or other societal institutions, such as youth care, the church or the police force! But we have to realise that our teaching job is per definition contributing to the socialising of the students we teach. We have a great responsibility in this respect. Even if teachers do not consider themselves as educators in a pedagogical sense, they are increasingly confronted with young people who bring their social and emotional problems with them to college. Authentic learning includes social and moral development. Consequently, teacher training has to deal with the world of youth. How does this world look like? What are the aspirations of young people, here and now? How can we contribute to the growth and ripening of these aspirations?

Re teamwork competences: authentic learning demands integration of subject matter areas. It cannot grow in situations where subject areas are taught in splendid isolation. Authentic learning is related to the reality of the world around us. That world is based on wholeness and not on an artificially divided collection of spheres of interest or cognition. This holistic approach must be firmly rooted in our teaching. More concretely this presupposes team teaching, combining fields of expertise, adding to the knowledge and experience of ones colleagues and, very important, being able to accept the relative value and impact of ones own subject-related discipline. Teamwork competences need to be included in modern teacher training. These competences, though, should not be limited to learning how to work in a team and the social dynamics related to teamwork. They should encompass a fundamental introduction and exploration of the philosophy of knowledge generation and intellectual development.

Re competences directed to proper cooperation with external stakeholders: authentic learning means learning in a natural context. This implies that teachers should be able to explore and value the role and influence of external stakeholders in the learning context. This concerns questions such as: how can I relate to how my students are being educated at home, to their culture of origin and to the aspirations of their parents and relatives? How can I be a good partner of those who train my students during their practical periods outside the college? Can I involve those partners in my teaching inside the college? Do I have proper knowledge of the working areas for which I prepare my students? Teacher training institutions can at least explore these competences by including practical periods in the teacher training program, not only within teaching institutions but also in the world of work. Also, it is very important that teacher trainers themselves keep up with the world of work.

Re competences with regard to reflection and personal development: teachers who are working in authentic learning processes have to make an effort to be involved in full. Playing the role of the teacher who offers information and who organises the learning process does not suffice. He or she cannot hide behind a conventional conception of teaching roles. Authentic learning demands authentic personal involvement. Next to intellectual involvement, a teacher should invest emotionally and morally. This implies that teachers are able to reflect on their personal acting, not only in a cognitive way but also from the point of view of personal involvement, interpersonal communication, being receptive to criticism, and willingness to share and adapt ones personal views and convictions with colleagues and students. Consequently, competences are needed to participate in intervision, reflection, personal development and coaching.

In summary, teaching in authentic learning situations demands the use of multiple intelligences. The question is whether our teacher training institutes are able to facilitate the development of these different competences and intelligences next to the evolving demands on content as a consequence of the rapid changes in the green sector. I know that some teacher training institutions in my country are working very hard to develop their curricula on the basis of these multiple competences. It is impossible for them to do this alone. Curriculum development and the restructuring of study within teacher training can only be successful if teacher training institutions are working closely together with their clients and stakeholders: colleges, students, the world of work. It is very promising that these joint ventures are actually developing in The Netherlands. On the one hand teacher training institutes make clear agreements with colleges to start joint (in-company) training programs. On the other hand, bigger colleges take the initiative to organise ongoing in-service training programs for their teaching staff. Fortunately, they do this with the external support and involvement of teacher training institutes.

Epilogue: understanding the young homo zappiens

This may all sound challenging and reasonable. There is one condition for a teacher to be successful in authentic learning processes that I would like to stress more explicitly. That is: the ability of the teacher to understand and value the changing life style of students of to-day. Especially the way in which young people of to-day and to-morrow collect, value and manage information.

Present-day students handle information completely different than I did when I was a student. They are able to carry out multiple tasks at the same time, they use the possibilities of our digital time: gaming, sms, video-production. And they do this all with an amazing speed and apparently with great ease and ability. At the same time they listen to music on their ipods or iphones, watch YouTube and participate in different chat boxes. Their way of managing information seems to be disorderly, incidental and haphazard. They combine this with a part-time job in the local supermarket, playing tennis or the piano. Yet their school results are no worse than those of their parents when they were young.

We have to realise as parents and educators that the homo zappiens way of life of the 'Einstein generation' will go on to evolve, probably even more rapidly than we have witnessed over the last decades. I have serious doubts whether our teachers are able to follow and understand this flow of change. If, however, we manage to open our hearts and minds -in this order- for the signs on the wall, we will be greatly rewarded. Authentic learning and authentic teaching will then develop in good combination and will surely contribute to closing the educational zoo forever.

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