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### Technical and Vocational Education and Training for Sustainable Development: The Challenges of Implementation



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#### overview

»» Despite an increasing interest by academic institutions in redirecting their technical and vocational education and training (TVET) programmes to embrace the concept of sustainable development, educators have encountered a number of ideological, curricular, instructional, and financial challenges that have greatly hindered the successful implementation of these programmes. Based on research done with productive learning programmes at various secondary public schools in Latin America, conversations with specialists, and an

analysis of the literature, I will lay out some of the main problems faced by schools that undertake the colossal challenge of imbuing vocational programmes with the theory and practice of sustainable development. When appropriate, I will present solutions that particular schools have employed to address the obstacles encountered. Although the observations are applicable to most vocational programmes, they are especially relevant to low-resource schools that employ inexpensive technologies.



## Ideological Challenges

>> Sustainable development attempts to broaden economic goals (e.g. satisfaction of basic needs, enhancement of equity), social goals (e.g. social justice, meaningful work, institutional responsibility), and environmental goals (e.g. protection of flora and fauna, erosion prevention). Although on the surface it appears that practitioners agree as to the "what" and "how" of each of these goals, in fact there is great confusion and disagreement. While most people view sustainable development as something "good", there is little consensus as to its meaning in either theory or practice.<sup>1</sup>

For example, disagreement exists concerning the role local communities should play in determining their own development, the role humans have toward nature and toward each other, and the role the economic system should exert in political, social, and cultural arenas. Decisions on these issues are based on competing interpretations of sustainable development endorsed by various groups and coalitions (including governmental, non-profit, and for-profit organisations), each with its own set of interests and moral and ethical values.

TVET teachers should discuss these various interpretations of sustainable development with their students. Even when a group comes to a semblance of consensus on a working definition of sustainable develop-



*A vocational programme in a secondary school in northern Colombia, which involves raising rabbits*

ment, translating theory into practice can be extremely challenging. Consider, for instance, the following examples of products and services that TVET programmes could offer: running a retail outlet, operating a restaurant, or managing a radio station. What would have to be considered to ensure that each of these TVET programmes follow principles of sustainable development?

Let us take the case of the retail store. For the sake of argument, let us assume that students are well treated, receive a fair share of the profits (if there are any), and participate in all aspects of the service delivery, including the decision-making process. In other words, some key aspects of social sustainability are addressed.

But other questions emerge: Is there a thorough discussion of what goods to sell and why? Does the store provide goods the locality needs? Which items satisfy true needs? Some items lend themselves to

fairly easy decisions (e.g. selling a simple, durable toy versus a highly expensive, highly sophisticated one that breaks after the first use), but many others fall into a grey area. Free market capitalism has solved this problem by assuming that as long as consumers demand a product, merchants should offer it, regardless of the product's social or environmental consequences. If the students want their store to remain faithful to sustainable development, however, it seems clear that they should *not* follow that logic. But, then, what easy-to-follow criteria should they use to make decisions?

These types of questions could help to awaken students' social and environmental consciousness, something that most conventional TVET programmes fail to address. Some of the practices suggested by these questions are easier to implement than others, and it would not be surprising to find TVET programmes that combine a mix of sustainable and unsustainable practices. This mix is inevitable in modern life. What is important, however, is that teachers and students are cognizant of when they are making a compromise and that they determine whether the compromise is worthwhile.<sup>2</sup>

## Curricular Challenges

>> Attempting to reconcile TVET activities with academic courses looms as a large concern for many schools. More often than not, the two types of instruction are separate and do not intersect. This is unfortunate because in productive learning it is important to contextualise in a real life setting the abstract lessons of the classroom. The various academic disciplines can converge around productive learning in ways that allow students to understand the interrelationships between the natural sciences, social sciences, mathematics, and humanities. In this regard an interesting experiment takes place in Mexico: All the publicly-funded secondary technical voca-

tional schools offer, since the autumn of 2004, thematic interdisciplinary curriculum that also includes the productive activities.

Two challenges are evident: First, the lack of teacher training and time to prepare new curriculum, and second, possible parent resistance to restructuring the TVET programme. If teachers truly want to integrate academic and vocational education, the burden is on teachers of academic disciplines to come up with new lessons that fit smoothly into the productive activity. This is easier said than done. Not only does curriculum development require specific

training, which most teachers lack, but also most teachers are so overwhelmed by their current responsibilities that they simply do not have time or energy to add new ones.

Some schools have found a way around this dilemma by offering teachers professional development on curriculum design and by requiring students to take more responsibility, so that they spend more time in independent learning during regular class time, freeing teachers to develop curricular materials both individually and collaboratively. Ensuring that youth remain on task without adult supervision is no small feat and requires a radical pedagogical

change at the school.

A second challenge is the potential for parental resistance to joining the academic and vocational curricula. Many poor parents, in particular, believe strict academic training for their children is a ticket out of poverty. They oppose curricular changes that they perceive detrimental to their children's future economic prospects. As a teacher told me:

"I don't think it would be prudent for us to concentrate our curriculum around SBEs [school-based enterprises, in which students sell a product for a fee to people other

than the students themselves] because it could be perceived as the "vocationalisation" of the school, and many parents would not see that in a good light. We've been able to secure parental support [for other activities at the school] in part because we're academically rigorous, and parents hope that will translate into better jobs in the future. If we were to become more vocational, it could be perceived as a move in the wrong direction".

Some schools, especially those that have excellent relations with the community, have been able to convince parents that curricular changes that link academic and

vocational education are beneficial for the students, school, and community. Other schools, however, have decided that trying to integrate the academic and vocational tracks is too onerous in terms of teacher training and the time and effort required to gain parental support. Some of these schools may choose first to consolidate the vocational programme within a sustainable development framework (which may take several years), and only then attempt to integrate the productive activities with some but not necessarily all of the academic disciplines.

## Instructional Challenges

» Competent and knowledgeable teachers are essential to the successful re-organisation of productive learning activities along principles of sustainable development. Unfortunately, the vast majority of teachers receive traditional training that rarely includes instruction on how TVET can be used to address social justice and environmental protection. Embarking on a programme that requires from teachers knowledge and expertise they actually lack can be a paralysing and frustrating experience. Quite often teachers would have to acknowledge their ignorance on a certain topic and seek additional training or assistance from other teachers or community members. As a construction teacher who uses energy-efficient materials said: "At times I feel bad because I don't have all the answers. One of my most difficult lessons

has been to learn to say 'I don't know' and realise that that is fine".

Equally important is to create activities that are participatory; that is, in which both girls and boys engage in various aspects of the production process in a non-hierarchical, non-authoritarian manner.<sup>3</sup> This allows students to become co-creators of the learning process and to assume positions of leadership that encourage responsibility and independence. To assist new teachers in adapting to the new pedagogy, some schools have successfully instituted a mentoring system for new teachers (pairing them up with veteran teachers) as well as biannual meetings where teachers can share both their positive and negative experiences and get feedback. Quite often, however, the main barrier is erected

by veteran teachers who have taught for many years and who feel too set in their ways to welcome change.

For professional growth teachers can take advantage of courses offered at post-secondary technical colleges, some of which tie production to sustainable development. With regard to school-based enterprises, these courses train vocational teachers in acquiring entrepreneurial skills that are extremely important in ensuring the financial sustainability of the programme. Other important resources are social and environmental non-governmental organisations that provide free or low-cost training to teachers on how to restructure their current activities and pedagogical strategies.

## Financial Challenges

» TVET programmes tend to be expensive to implement, and poor schools suffer disproportionately from a lack of financial resources. This problem affects not just alternative TVET programmes but vocational programmes in general. Many schools have come up with innovative ways to address this issue. At one school that could not afford to expand the school campus to set up a hydroponics project, the roof of one of the school buildings was reinforced to support this project.

School-based enterprises pose a different problem. One of the purposes of this modality is to teach students entrepreneurial skills they can use post-graduation. In many poor schools, the enterprise needs to make sufficient money to defray its production costs in order to ensure its continuation and to demonstrate the economic viability of a student-run project. Therefore, teachers may be pressured to make the enterprises more cost-effective and efficient, which at times runs counter to the enterprise's educational mission. At a

school where staff were debating this issue, teachers had different opinions. One said:

"We want our students to learn. If that means taking longer to produce something or even not making a profit, so be it. But we cannot sacrifice the learning experience for efficiency".

Another teacher had a different viewpoint:

"While I agree that recovering costs or even


making a profit shouldn't be our overriding concern, over time we should make our school-based enterprises look like real enterprises so that students get an inkling of what a real job looks like, or even better, what it ought to look like".

School-based enterprises and similar modalities that seek to instil business skills in students end up walking a fine line between educational and efficiency goals. One useful strategy that some schools have employed is to give students major responsibility and accountability for handling the TVET finances. Placing students in charge of the accounting forces them to ask such questions as: Where does the money go? What can be done to minimise expenses without sacrificing product quality or social and environmental responsibility? How can we bring in additional funds? Resolving these questions enables students to become more mature and responsible in their fiscal decisions.

A comment should be made about educational decentralisation and how it affects school finances. Many countries have adopted forms of decentralisation whereby local governments are granted financial power over many educational expenses – a notable exception being teacher and staff

salaries. Some of the expenses include campus maintenance, the hiring of staff beyond a certain base level, and physical improvements/expansion of the school campus. In regions where corruption is low and accountability strong, financial decentralisation can be beneficial because school needs tend to be satisfied expeditiously.

In regions controlled by highly authoritarian leaders or by a few traditional families, however, this arrangement may backfire, because if a school adopts a pedagogical model that goes against the interests of the local elite, it may fall victim to the prejudices of local politicians. In one town in northern Colombia, local politicians opposed the pedagogical proposal of a local secondary school – which included such innovative programmes as a vocational programme based on organic agriculture, active civic participation, and sexual education. To sabotage the school's progress, the municipality withheld funds for the vocational programme and other school activities. School officials lodged formal complaints through the judicial system to no avail, and they have been left hoping for the election of a new local government that might be more receptive to the school's educational project.


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## Final Thoughts

>> The challenges discussed here are by no means the only ones a TVET programme may face. Others include: how to effectively incorporate community assets as an integral part of the programme; how to gain the support of administrators and teachers and educate them about the importance of sustainable development and its potential for transforming the academic curriculum; and how to track what happens to graduates of the programme in their own job sites, a highly useful information for continually improving the TVET programme.<sup>4</sup>

A final challenge for TVET programmes is to focus on products and services that have as their leitmotif social and environmental sustainability. From a social standpoint, it is important to choose economic activities that support the integrity of the social system, such as renovating historic landmarks,

assisting poor and elderly families in repairing their homes, offering day care centres for preschool children of needy families, and an assortment of other vocational endeavours that seek to enhance community well-being.

From an environmental standpoint, TVET programmes might focus on the production of environmentally sound products such as photovoltaic cells, energy-efficient building materials, and water-efficient plumbing appliances. These are just some of the endeavours that, if applied conscientiously and with a focus on passing on skills that place the community at the centre, can assist TVET programmes in making the important decision of becoming part of the solution by abandoning socially and environmentally destructive practices instead of remaining part of the problem.

## Notes

<sup>1</sup> W. M. Adams, **Green Development: Environment and Sustainability in the Third World** (London: Routledge, 1990).

<sup>2</sup> A. Arenas, "School-Based Enterprises and Environmental Sustainability", **Journal of Vocational Education Research** 28, no. 2 (2003), 107-124.

<sup>3</sup> For a good example of what has been called a "critical pedagogy of work", see R. D. Lakes, ed., **Critical Education for Work: Multidisciplinary Approaches** (Norwood, NJ: Ablex, 1994).

<sup>4</sup> For other challenges, see D. Dippro, "An Ethic of Sustainability for Work Education", **Journal of Vocational Education Research** 23, no. 4 (1998), 325-338.