



**A report discussing ways in which technical colleges in Austria are increasing environmental awareness and what didactical changes are or could be taking place to increase students' environmental intelligence**

Schools can produce vast amounts of carbon emissions; however they can also be a strong force to encourage change concerning environmental issues. Many schools were built in a time when energy efficiency was not an important topic and other factors drove the construction of these buildings. The amount of energy used by these buildings depends on the type of construction, the year in which they were built as well as the amount of maintenance that has been carried out- something which students themselves do not have the power to manipulate. These days the awareness of energy efficiency is growing rapidly, and on the whole, most schools seem to be enthusiastic about rethinking their attitudes and making changes to areas which they can influence- but how much is actually being done?

This report will discuss how primarily in technical colleges didactic methods can be changed to become more energy efficient within vocational educational training (VET). Focus will also be drawn towards how students themselves can play their part in reducing energy consumption in a cost effective way and what influence they can have. As mentioned, governments are generally accountable for the design change and renovation of existing schools; but it is a student's personal responsibility to act consciously upon their own individual behaviour by implementing changes into their daily lives to play their part in saving energy.

Specifically Austrians "Hörer Technische Lehranstalt (HTL)" – in English a technical college, use high amounts of technological appliances through workshops and standard teaching practice. The following are examples of technology orientated subjects one Austrian technological college focuses on:

- mechanical processing of materials
- plastics technology



- printed circuit board manufacturing
- SMD mounting
- appliance construction
- electro-installation
- electronics
- measurement and control engineering
- computer technology

**([www.htl-donaustadt.at](http://www.htl-donaustadt.at))**

Each subject area provides practical training allowing students to manage and maintain facilities in addition to gaining hands on experience for further educational development and future employment. When using a significant amount of technology within an educational environment becoming a large energy consumer is unavoidable. Due of this, it is essential that such colleges and schools take into consideration environmental sustainability and are energy efficient. Learning how to use, sustain and dispose of electrical equipment in the most energy efficient way are essential elements and should be standard within the VET curriculum.

Some technical colleges have been known to offer their students the possibility to complete a qualification known as an “Abfallbeauftragter” (a waste management officer). This is an optional qualification students can acquire as proof of receiving training in correct waste disposal and recycling, are aware of legal and administrative aspects as well as being able to keep records and write reports in issues concerning correct waste disposal. In Austria the law stands that a company who produces over 2000kg of waste a year must pay to train or employ at least one worker who possesses the “waste management officer” qualification. Therefore if a student already has this qualification it will be seen as a benefit by future employees when applying for jobs.

As well as these extra qualifications schools should organize experts such as a climatologist or representatives of organisations who focus on climate change to visit schools and give talks to students about environmental issues.



In addition, school trips could be focused around the topic “energy efficiency”. Wien Energy offer organized 90 minute educational tours around their heating, gas and power plants for student from years 1-4, 5-8 and year 9 upwards. They also offer the possibility of shaping the tour around specific interests, so depending on class requirements the tour can be adapted to meet these needs. As well as these tours further events are scheduled on a regular basis and can be found through the [www.wienenergie.at](http://www.wienenergie.at) website.

For students in all secondary collages a fund-raising activity to raise money would be a challenging but a rewarding initiative to organise. Personal organisational skills, marketing, financial organisation and responsibility would be required and ultimately money to spend on energy saving adaptations within the school premises could be generated. These could include: double glazed windows, new paint to brighten walls, energy efficient light bulbs, recycling facilities and monitors to track energy consumption.

As well as fundraising, competitions can be entered and won by technical collages as was proven by the technical college *htl donaustadt* in 2006 where they won the “Environmental Prize for the City Vienna”. Being awarded this prize ensures competitors prove their commitment to innovation, cooperation und communication in terms of positive environmental development. Having a goal like this is an encouragement for students and being awarded such a prize by Vienna’s current mayor, Dr. Michael Häupl, in a ceremony in the Vienna city hall is very good publicity for any organisation.

To be awarded such a prize, many steps have to be taken to prove that the organization in question has taken many steps towards being more energy efficient. An example of possible initiatives a technical collage could organize is a ‘tripshare’ database; something which could be integrated into the curriculum within such a college and enables students to organise shared travel. If students enter their primary destination and their final destination, a match of other people using the same route can be found, thus making it



possible to share cars and buses. An example of such a website is: [www.dgtripshare.com](http://www.dgtripshare.com). A system like this could also encouraging students to ride to school by bike in groups if secure storage areas for bicycles are provided. This is something which has also been encouraged by The Energy Efficiency Watch Project who state that they are already *in*: “Support of cycle transport and pedestrians in Austria, Finland, and Germany.” ([www.eceee.org](http://www.eceee.org))

Recycling is already present in schools but having these facilities available within the classroom allows students to become proactive and share the responsibility of ensuring bins to separate glass, plastic, paper become commonplace. It is extremely important that students have this responsibility within the classroom community as it sets a frame of mind the individual will have for other areas of waste disposal i.e. at home and within their general local community.

*“Recycling one aluminium can saves 90% of the energy needed to produce a new one - 9kg of CO<sub>2</sub> emissions per kilogramme of aluminium! For 1kg of recycled plastics, the saving is 1.5kg of CO<sub>2</sub>; for 1kg of recycled glass, it is 300gr of CO<sub>2</sub>; and recycling 1kg of paper instead of landfilling it avoids 900gr of CO<sub>2</sub> emissions as well as methane emissions.”*

**(<http://ec.europa.eu>)**

A project which has been introduced in Italy, Turkey and Slovenia names: “Better Building – Certifying VET teachers as energy saving advisers. A transfer system into three different European societies” is a good example of a country developing them selves further and taking the initiative to educate learners about energy efficiency in schools, businesses and colleges, through development of energy saving buildings. Austria could show further global stewardship by introducing such systems into schools but on a broader level so that energy efficiency is the underlying message in all subject areas. It is



especially crucial in schools and colleges whose curriculum focuses on subject areas within construction as it is these individuals who will make a difference in the future.

An evening which is currently being organised in a technical college in Vienna, to promote energy efficiency within education is called: "Langen Nacht der Nachhaltigkeit- Ökologie – Ökonomie – Gesellschaft" (translated: An Evening of Sustainability- Ecology- Economics-Community). In association with this evening, students, teachers and university professors have organised presentations, workshops and talks concerning the environment. These include titles such as: „Wasser – unsere Zukunft!“ (Water- Our future), „Fairness und Ökologie am Laufsteg“ (Fairness and ecology on the catwalk) and "Blumenerde aus Flip Flops und Zahnbürsten" (Flower soil made from flip-flops and toothbrushes). Students, teachers and visitors to the college will be attending this evening to broaden their knowledge of energy efficiency, recycling and general intelligent environmental behaviour. These kind of activities are a way of expanding the teaching of energy efficiency from not just the classroom but also involving the outside community.

These types of evening are what is necessary for intelligent energy consumption to be developed further and make more people aware of the consequences energy waste can have. Schools themselves carry the responsibility of forming their curriculum and VET in a way that incorporates energy efficiency on a horizontal level throughout a student's school day. From offering additional qualifications that enhance energy awareness, to tours and talks from experts, as well as fundraising activities, competitions and special events- these are all areas which are a crucial focus to expand energy efficiency within educational environments. Only through an intense horizontal focus throughout the educational system can energy efficiency be taught on a long term basis and have a real impact on the future.



This report has been written by a research assistant who works for BEST (BEST- Institute of Continuous Vocational Qualification Training and Personnel Training Ltd, Vienna/ Austria) and also works in the VET field of education. The research was carried out on a scientific basis but personal experiences and discoveries were also included. The 'Better Building – Certifying VET teachers as energy saving advisers. A transfer system into three different European societies' project is only one of many international projects which BEST organises and coordinates. Many more can be found on their official website ([www.best.at](http://www.best.at)) with detailed information towards each project.

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### **Resources:**

DGtripshare.com The Environment do you care? If you do bus, bike, walk or share! 2009. *How it works* [online] Accessed: 13th November 2009, Available at: <<http://www.dgtripshare.com/howitworks.asp?uxi=&cr=check>>

HTL Donaustadt. 2009. [online] Accessed: 12th November 2009, Available at: <<http://www.htl-donaustadt.at/>>

Micronas Umwelterklärung. 2004. [online] Accessed: 12th November 2009, Available at: <<http://209.85.135.132/search?q=cache:CvPZ2VDBf3wJ:www.micronas.com/company/environmentalstatement/index.html%3Fdoc%3D961728+warum+mach+man+ein+Abfall+Beauftragter&cd=4&hl=en&ct=clnk&gl=uk>>

Permanente Führung. 2009. *Unser Angebot für SchülerInnen ab der 9. Schulstufe* [online] Accessed: 12th November 2009, Available at:



<<http://www.wienenergie.at/we/ep/programView.do?contentTypeld=1001&channelId=-22267&programId=13662&pageTypeld=11892>>

Promoting Energy Efficiency in Europe, Insights, Experiences and Lessons learnt from the National Energy Efficiency Action Plans. 2009. [online] Accessed: 13<sup>th</sup> November 2009, Available at: <[www.eceee.org/EEES/EEW\\_brochure](http://www.eceee.org/EEES/EEW_brochure)>

Recycle. 2009. [online] Accessed: 11<sup>th</sup> November 2009, Available at: <[http://ec.europa.eu/environment/climat/campaign/control/recycle\\_en.htm](http://ec.europa.eu/environment/climat/campaign/control/recycle_en.htm)>