NORTHERN
Regional College **nrc**

International online co-operation enhances local curriculum

Case Study of Innovative Practices for Teaching and Assessment in NI FE

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NRC School of Computing

Background

Northern Regional College's (NRC) innovative engagement with Daniel Castelao College (DCC) in Vigo, Spain and Deltion College Zwolle (DCZ) in Zwolle, the Netherlands, has allowed NRC to co-operate with counterpart European colleges on curriculum issues such as virtualisation and cloud computing. From the outset, we explored how we could use emerging technologies to accomplish practical computing tasks in co-operative international teams.

To facilitate our curriculum sharing, we have agreed to use the innovative technology developed by the European Commission – eTwinning. This online tool aims to encourage European schools and colleges to co-operate using ICT by providing the necessary infrastructure of online tools, services and support. eTwinning provides the best platform for forming partnerships and developing collaborative curriculum development projects, as well as learning from the experience of others, across the three countries.

One of the key elements we are using is Microsoft Azure – a cloud computing platform and infrastructure – for building, deploying and managing applications and services through a global network of data centres.

Developing the innovation

After consulting with Microsoft, we aim to use this framework to enable the installation and configuration of environments by the Level 4 equivalent DCC students and then testing of these formed operating systems by the Level 3 students at NRC. Ultimately, this will mean co-operating to achieve learning objectives using one shared resource, as illustrated in the diagram below:
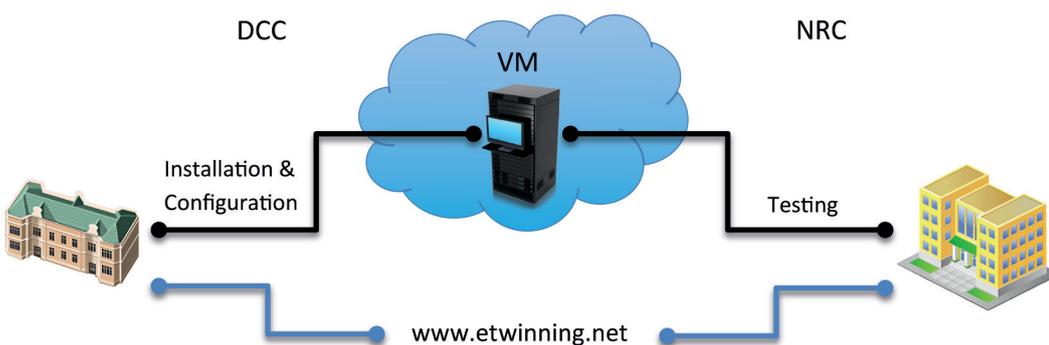
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During the virtual machine (VM) testing phase, NRC is using the open source application Oracle VirtualBox. We have been using this flexible virtualisation software to install and configure servers, associate client machines and connect from multiple NRC campus sites. We will complete our testing and evaluation of this setup by the end of 2015.

Innovative technologies

eTwinning

The eTwinning Portal (www.etwinning.net) is the main meeting point and workspace for our colleges. Available in 26 languages, the eTwinning Portal now hosts around 230,277 members and over 5462 projects between two or more academic institutions across Europe. The Portal provides online tools for academic staff to find partners, set up projects, share ideas, exchange best practice and start working together immediately, using various customised tools available on the eTwinning platform.

Testing solution – Oracle VirtualBox

VirtualBox is a cross-platform virtualisation application. It can be used on all computer types, whether they are running Windows, Mac or Linux. It extends the capabilities of your existing computer so that it can run multiple operating systems (inside multiple virtual machines) at the same time.

For example, you can run Windows on your Mac, run Windows Server 2008 and a Windows 7 system on your Windows 10 PC, and so on, all alongside your existing applications on your host OS. You can install and run as many virtual machines as you like – the only practical limit is your host machine's specification.

Microsoft Azure – VM scenarios

Microsoft Azure will eventually give us full control over VMs located in the cloud. This will enable students at any location that have access to Microsoft Azure to install and run software remotely. In this project, students will potentially be able to hand off VMs online easily, so they can configure multiple machines with different roles, in order to create complex solutions depending on the level of the course. The VMs located on Azure are nearly identical to conventional (real) servers, and are an easy way of moving existing resources to the cloud.

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Using the cloud-based VMs enables, for example, NRC students on a level 3 computing qualification to test VM installation and configuration completed by their level 4 counterparts in DCZ.

How does this help our students?

The students will benefit from engagement with these innovative technologies and each other in the following ways:

- a central platform for collaboration and co-operation between academic institutions, domestically and across Europe;

- a greater understanding of the lives and cultures of other people, including classmates from different countries;

- development of lifelong skills, such as teamwork, co-operation and independent learning skills;

- improved language skills;

- greater motivation, as students want to share ideas and work with partner institutions in other countries; and

- application of what students learn in class in a real-world context.

How does this help the colleges?

The benefits for each college are:

- improved language skills for lecturers;

- access to a new network of lecturers and ideas; and

- the colleges become known and recognised as offering good practice for international work.

Practical benefits

The eventual utilisation of innovative software like Microsoft Azure promotes resource efficiency – as a cloud-hosted VM enables the use of a single online location to assess the learning outcomes and to conduct peer evaluation, due to the open digital nature of the core components. For example, when the lecturer in one college gives a student access to a virtual space through Microsoft Azure, the student then installs and configures an operating system on that VM based on a specification matched to the learning outcomes of a course. The lecturer in another college can then remotely access and check that the VM structure matches the assessment criteria. Through eTwinning and Microsoft Azure, this VM can then be passed across to a student in a different college with the minimum of effort, so they can complete a peer evaluation against the assessment criteria of their related qualification. In summary, eTwinning provides the communication platform and Microsoft Azure offers the software implementation platform.

Accreditation