Virtual music school becomes a reality

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(PhysOrg.com) -- Students of popular musical instruments may soon be learning to play with the help of a new generation of intelligent, interactive computer programmes.

While it is unlikely, and most people would say undesirable, that computers can ever take the place of teachers, they are becoming an indispensable support tool in many subjects and this may soon also be the case with music.

As with most computer-aided teaching, the key to developing a musical tuition system is developing superior software able to hear and react to music being played and make judgements as to whether it is being played correctly.

This is what a consortium with partners from six European countries has been trying to do for the past three years in the EU-funded Vemus project - and if initial results are anything to go by they have succeeded.

Concentration on wind instruments

The project's researchers set out to develop a teaching architecture and software platform for novice and intermediate level students of recorders, flutes, trumpets, saxophones and clarinets.

Project coordinator George Tambouratzis explains the decision to focus on these particular instruments was made for two reasons. Firstly, it is considerably easier to develop a system for monophonic wind

instruments like these than it would be for a polyphonic instrument, such as a piano. Secondly, the project partners did a survey in their home countries before the project got underway and found these were the five most popular instruments for beginner students.

They then decided to address three specific learning scenarios. In each scenario, a musical score is initially input into the platform so the system can then recognise it and check if the right notes are being played in the right sequence, using correct note durations. Any deviation from the score is noted by the system and fed back to the student.

Three learning scenarios

The first e-learning scenario is self-practice, where a student practices a piece of assigned music at home. The student is able to improve his or her performance by taking into account the feedback from the Vemus platform.

The second scenario involves distance learning and is targeted at students who live a long way from a music teacher, perhaps on a remote island. A teacher can set the pupil tasks to perform via the distance learning platform and the student can then practice the set pieces over and over, each time getting feedback from the platform to show where things are going wrong. Once the student is happy with the work, it can then be submitted to the teacher for review via the platform. The teacher can then give a detailed assessment of the work, make comments on it and grade it.

The third learning situation is in a conventional classroom where collaborative learning and group activities can take place involving a teacher and several students. An example of this is the teacher getting one student to play a piece that the others follow as the score. The details of the performance - distributed simultaneously via a wireless network

established by the platform - are displayed graphically on each of their personal PCs.

Testing in different countries

All of the instruments and the different types of platform have been field tested by project partners in different countries, including Sweden, Greece, Romania, Lithuania and Estonia.

According to Tambouratzis, the feedback to date has been good, although he stresses the final feedback will all be assimilated into a end of project report due in early 2009.

“Initial results show that students using Vemus learn more quickly than control groups studying the same music using conventional teaching methods,” he says. “Motivated by interaction with their computers, the Vemus students also study longer and learn more pieces than the control group students,” he says.

Although the project is ending, the website, from where teachers and students can download trial versions of the Vemus platform for free, has been licensed for a further three years. “Although everything still has to be finalised, it seems likely that the software will not be commercialised but will be made freely available to anybody who wants to use it,” says Tambouratzis.

Already several schools and conservatories which were not involved in the project have expressed their interest in using the system, and publicity is encouraging others to join. Different curricula in different countries and specific local requirements are not a barrier, Tambouratzis says, as it is not complicated for teachers to load new scores into the system which has a multilingual interface available in a number of European languages, including the major ones.

Looking to the future, he says now the basic Vemus architecture has been put together it is quite easy to add new musical instruments to the modular system, although it would be more complicated to add polyphonic ones. Once the project is completed, the partners have some ideas for future projects to build on the work done here, he says, though discussions are still at an early stage.

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