

ICT for Educational Pedagogical Innovations and Learner Diversity

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Abstract: Technology is one of the important tools for learning and teaching nowadays. This session aims at introducing various technologies and strategies used in different schools to enhance teachers' pedagogical practices and cater learners' diversity. It includes, using an intelligent tutoring system for Special Education Needs (SEN) students, using learning management system for intellectual disability students, as well as through one to one computer and online role play games to facilitate students' learning. It is hoped that this session can give some inspirations and stimulations to education community for the implementation of e-learning that cater the learner diversity.

Structure of the Session

This session includes four strategies for using technology to cater for learners' diversity and teachers' pedagogy nowadays in Hong Kong. The first two strategies are especially designed for students with special education needs and two are for normal primary school students.

Intelligent Tutoring for SEN Students in Mathematics and Liberal Studies

Usually, the SEN students have tremendous difficulties in learning. They do very often lag far behind the standard of other ordinary students in the same class.

An Intelligent Tutoring System (ITS) may not be able to solve completely the problem, but to some extent may ease the situation. The aim of this project is to establish such kind of online learning platform under the sincere help from the commercial partners. The subject content will involve Mathematics and Liberal Studies.

LMS for Assessing Students with Intellectual Disabilities in Mainstream Curriculum

The targets for this project is built on a joint university-school project on a curriculum approach that gives students with learning difficulties associated with any range and type of disabilities to access the general curriculum.

The school proposes to build a tailor-made web-based Learning, Teaching and Assessment Platform (SELTAS) that evolves from the curriculum framework and structure of the general curriculum. The proposed e-learning system of SELTAS is structured around the 8 Key Learning Areas of the general curriculum. This is different from many e-Learning platforms and applications which only focus on specific KLA. This is an important feature as it not only ensures that students with intellectual disabilities would be exposed to a broad and balanced curriculum, but that all learning elements will be organized under the same system.

SELTAS is divided into three Main Modules. They are File Management System, Learning Management System and Assessment Management System. On completion, the SELTAS will be the only teaching, learning and attainment referencing System that has been designed for students with intellectual disabilities. Teachers can freely access the system to import their lesson planning data, creating resources or downloading resources relevant to their lessons. Students can also access the system to engage in practice and exercises that have been designed to match their levels of attainment. Students with input device deficiencies can access those learning exercises based on their attainment levels, with assistance from teachers, parents or specially designed input aids. This is different from existing platform which have been designed for teachers and students of attainment levels above those of an average Primary One Student. The system is built on the framework and structure of the general curriculum ensuring that it is applicable to teachers and students in general and special schools.

The Future School in Hong Kong

This presentation is going to show the latest e-Learning development in Hong Kong using the experience of

Fung Kai Innovative School which was one of the 12 worldwide schools in the "Innovative Schools Programs" in Feb 2007. This innovative e-Learning project aims at constructing a student-centred learning and assessment for learning with the integration of ICT in teaching and learning for the 21st century.

With the advent of technology, the school has created the technology rich environment where students can access the Internet with their own Netbooks anywhere at any time with the interactive e-Learning content of English, Mathematics and Chinese. These learning materials are co-developed by the school and the publishers. Besides the project also includes the design of an interactive platform namely "SharePoint" which allow students for uploading and downloading e-Learning materials, data-analysis discussion in groups and the forum with instant feedbacks among peers and teachers.

Use of Educational Games for Experiential Learning

Genesis Era is a student-centred project, utilizing the concept of virtual online gaming, akin to major massively multiplayer online role-playing games (MMORPG) such as Dungeons and Dragons. Students can create their own character and play with others in the network in real-time interactive virtual space. The game will make it possible to chat, share the learning progress, collaborate in group and seek help from others. As a player, students can help their kingdom to complete the missions (learning tasks) which allows them to enhance the skills of their character and rewards them with golden coins they can use to buy their characters clothing and weapons from the virtual store. Virtual characters can join the missions by walking through different virtual areas, including the Royal Palace, library, home, clothing stores and furniture stores. "Genesis Era" through constant learning tasks, develops the habit of continuous learning. The game world provides different levels of learning missions to enable students to clear the missions by their choice, individual ability and aptitude. It can build up their spirit of self learning, and they can enjoy the pleasure of learning.

The project will be conducted by 2 schools: St. Edward's Catholic Primary School and Tsz Wan Shan Catholic Primary School. Both schools have rich experiences in developing school-based curriculum and will develop the new online role play games with 2 publishers and a game programming company. The hardware and the network services will be supported by a telecommunication provider.

The design of the online role play game project is based on each unit and contains a number of different abilities and levels of learning tasks with electronic text and multimedia materials. The teaching process includes several major steps, namely preparation, classroom learning activities, after-school consolidation exercises, self-classroom and outdoor learning. Before teaching at school, students have a pre-task mission at home. They will help teachers to know students' ability levels and understanding, and the potential difficulties in learning the content. Then, teachers can adjust the learning objectives and teaching strategies. Students use tablet computers with wireless networks to complete the learning missions. Teachers design some interactive learning missions to conduct the whole lesson. Students can attempt the missions with their classmates by using the platform grouping function and share their mission result with each classmate. Both teachers and classmates can give feedback for their learning immediately. Through "Genesis Era", the teachers can easily understand students' learning progress and arrange suitable after-school consolidation exercises. Students can do the consolidation missions at home after studying in the classroom. Teachers can give different levels of missions to individual students according to the performance of school learning activities.

Theme of the Session and Expected Outcome(s)

Teachers from the SEN schools will share their experience on using tutoring system and learning management system for catering individual differences first and then teachers from the normal schools will provide some practical strategies how the use of ICT such as one to one computing and online game to facilitate the development of 21st century skills and cater for learners' diversity.

By the end of the session, the participants will

- understand the functions and content of the e-Learning platform in Case 1
- have thoughtful understanding of the web 2.0 functionalities in Special Education
- know more about the importance of centralization and categorization of LTA (Learning, Teaching and Assessment) resources
- have the understanding of SAME curriculum (Systematic Approach to Mainstream Education)
- be inspired to reflect what they need to prepare for the implementation of the e-Learning project in their own situations. They may consult or seek further support for planning their school based e-Learning project if they want to take a step forward for this change
- find out how virtual online games can build up students' spirit of self learning so that they can enjoy the pleasure of learning

Session Activities—Brief Rundown of Each of the Activities to be Conducted in Sequence, with Focus, and Person(s) Involved

	Session Activities
1	Intelligent tutoring for SEN students in Mathematics and Liberal Studies
2	LMS for assessing students with intellectual disabilities in mainstream curriculum
3	The future school in Hong Kong
4	Use of educational games for experiential learning
5	<i>Q & A</i>