



Project-based Learning on Learning Mall on Data Analytics Using Qlik Sense

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Case Introduction

Dr Jean-Yves LE CORRE is an Associate Professor of Practice at XJTLU and faculty lead of IBSS@Data Mining Lab, which aims to promote technology-driven teaching solutions. He recently took a new position as an educational developer at the Academy of Future Education of XJTLU, to help support the implementation of the University's vision for Learning and Teaching at XJTLU. He played a key role as an academic lead in the IBSS Summer School Bootcamp "Data Analytics & Business Strategy", a ten-day intensive online immersion programme, which was hosted by IBSS in August 2021 and delivered 100% on XJTLU Learning Mall. In this intensive and exciting learning experience, students from XJTLU and partner universities worked in project teams to propose a strategic plan and dashboard of performance



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indicators for a virtual organisation. During the Summer School Bootcamp, a team of researchers worked under the supervision of Dr Jean-Yves LE CORRE on an action research study called 'Constructivist-based Models Blended Learning: An Innovative Learning Model for Management Accounting Education' which was funded by XJTLU Summer Undergraduate Research Fund programme. This study helped develop new methods and strategies for syntegrative learning, in particular focusing on the integration of Data Analytics Technological Authoring Tool Application to support individual and group cognition. Through data visualization, collaborative learning tools and digital artifacts produced in formative and summative assessments, Data Analytics Technological Authoring Tool Applications like Qlik Sense enhance cognition and social interaction at different stages of the learning process. Qlik Sense is available to all students at XJTLU through the Qlik Academic Programme

(<https://www.qlik.com/us/company/academic-program>) which is offered free of charge by Qlik Corporation, a global data analytics software solutions provider.

Project-based Learning in Blended Environment

Web-based instruction has increased dramatically during the Covid-19 epidemic period, while constructivist learning approach and methods have gained growing interest in various disciplines in Higher Education around the world. More recently, digital learning ecosystems have emerged as the main component of leading learning strategies to build less formal learning environments, combining diverse learning activities, in a more complex environment which is necessary to implement syntegrative learning. Project-based Learning is a widely recognized instructional design approach and model which provides a practical and suitable methodology framework to educators to implement syntegrative learning philosophy. The approach can be used in such environments, among other common types of instructional design like problem-based learning, classroom as organisation, model-based learning or scaffolded knowledge integration. In project-based learning, participants set their

goals and encounter unexpected discoveries during their interaction with the environment to guide their actions. Several experts in educational technology and educational development argue that web-based technologies can greatly help design and implement project-based learning experiences and highlight the advantages of information and communication technologies. Several functions, the combination of asynchronous and synchronous learning activities in XJTLU Learning Mall, like peer assessment, forum discussions or knowledge sharing databases have been used to facilitate the division of project scenarios into sequences and multi-tasking, by dividing problems into sub-problems where learners perform only one task at a time. Those tasks should be flexible enough for learners to be able to complete whatever their background and basic knowledge.

Digital Tools & Artifacts

In the IBSS Summer School Bootcamp, participants worked on a business scenario to prepare for a business case where it is necessary to develop and challenges their assumptions at different stages. Participants are divided into project teams and discuss those assumptions in virtual rooms. Project teams collect, interpret, analyze various forms of internal and external data, and present their results in the form of digital artifacts (visual dashboards of performance indicators) to a Judge Panel using the Technological Authoring Tool Application (Qlik Sense). Meanwhile, participants are invited to confront their opinions, make decisions and visualize various forms of data when completing successive collaborative learning activities, either synchronous or asynchronous, as well as to collect, interpret, analyze various forms of internal and external data along different steps of the learning process. This process is facilitated by internal scripts providing a set of instructions to participants. The learning process features a range of situational contexts like in a typical consultancy project, with multifaceted learning activities.

Instructional Strategies

Recent research studies in educational cognitive theory suggested that digital representations and formats and the creation of digital artifacts provided

by decision aids like the data analytics software tools (Qlik Sense) can greatly enhance learning performance in Project-Based Learning. Effective use of Technological Authoring Tool Applications, allowing data visualization for example, can help to avoid unnecessary cognitive tunneling or cognitive overload. And like other Technological Authoring Tool Applications, Qlik provides a range of powerful visualization formats and collaborative tools in data sourcing and visualization, which are relatively easy to use for participants. However, this can be really effective only when mental representations are consistent with learning tasks and if the learning process is supported by well-designed instructional scripts. By mental representations, we mean the representations through which learners can 'cognitively' manipulate the problem they wish to solve under the Project-based Learning approach, and interact with other participants or the digital learning environment to solve this problem. The research study conducted during the IBSS Summer School bootcamp greatly facilitated students-teachers' feedbacks in order to enhance the development of such internal scripts or their combination with external scripts available on Qlik Learning and Community Portals.



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