

Designing an educational scenario using the principles of Universal Design for Learning

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Abstract— Grounded on new research in neuroscience Universal Design for Learning (UDL) constitutes an educational approach that promotes access, participation and progress in the general curriculum for all. UDL recognises the need to create opportunities for the inclusion of diverse learners by providing curricula and instructional activities that allow for multiple means of representation, expression, and engagement. In the first decade of its development, the emphasis in the domain of UDL was on the use of technology to inclusive education and accessibility for the disabled. Although UDL has great potential it has been hard to implement on a large scale. UDL requires collaborative planning amongst teachers with different curriculum knowledge and skills. Complaints that are often raised include lack of time to co-plan and lack of resources to teach a differentiated curriculum. Open Discovery Space is a portal to browse and build educational content, lesson plans and scenarios. In order to bridge the gap between policies and practice in applying UDL, we present the adaptation of an educational scenario template so as to incorporate the UDL principles.

Keywords-Universal Design for Learning, inclusion, holistic approach, teacher networks, variability, learning styles

I. INTRODUCTION

There is a variety of standards describing teacher competences. Among the most popular ones are the UNESCO ICT Competence Framework for Teachers [1] and the “Competency Framework for Teachers” by the Department of Education and Training of West Australia [2]. According to the later one an effective teacher throughout all phases of their teaching career demonstrate among others the attribute of the inclusive teacher; treating students with care and sensitivity by identifying and addressing their educational, physical, emotional, social and cultural needs. He/she is astute in recognising and responding to barriers that inhibit student outcomes.

In parallel in the context of the Agenda for New Skills and Jobs [3], recent forecasts of future skills' needs anticipate an increase in jobs requiring high- or medium-level qualifications. However, such qualifications need to be accompanied by key competences [4] that equip young people to work in intercultural, multilingual and rapidly changing circumstances and to contribute to creativity and innovation. The concept of key competences originated with the adoption of the Lisbon Strategy in 2000 and it resulted in the European Reference Framework [5]. Key competences in the EU framework are those that ‘all individuals need for

personal fulfillment and development, active citizenship, social inclusion and employment’. The development of key competences should include both subject-based and transversal competences that will motivate and equip students for further learning. How can the above be interpreted and implemented in the teaching practice?

II. STATE OF THE ART

Grounded on new research in neuroscience and the Design for All principles [6], Universal Design for Learning (UDL) constitutes an educational approach that promotes access, participation and progress in the general curriculum for all. UDL recognises the need to create opportunities for the inclusion of diverse learners through providing curricula and instructional activities that allow for multiple means of representation, expression, and engagement. UDL promotes authentic holistic approach to learning and assessment. When educators hear the term UDL, most associate it with technology [7]. However, UDL is not solely about the use of technology in education, but it is also about the pedagogy, or instructional practices, used for students with and without disabilities [8]. New developments on the theory and practice of UDL underline the importance of instructional pedagogies that facilitate accessibility for diverse learners [9]. Recent research findings have proved that UDL can support access, participation and progress for all learners [10]. But, few have provided a comprehensive framework to put the UDL pieces together, in a practical, research grounded and efficient way [11]. UDL is much more complex than we originally thought [12] and has not been implemented on a large scale. Udvari-Solner et al. [13] illustrate ways to apply UDL principles to provide all students with multiple means of representation, engagement and expression. UDL requires collaborative planning amongst teachers with different curriculum knowledge and skills [14]. Complaints that are often raised include lack of time to co-plan and lack of resources to teach a differentiated curriculum.

UDL framework is based on the axiom that learner variability is normal and systematic and thus we need to proactively plan for it, planning for the range of learner variability. UDL is such a curriculum design framework based on the assumption that curricula are disabled and not the learners. Although Kolb’s theory about learning styles [15] has been criticized, as well as evolved [16], CAST [17] gives some guidelines towards addressing different learning styles.

III. ADAPTING THE PROJECT BASED LEARNING TEMPLATE

According to UDL principles the ideal teaching approaches are project based learning [18] or experiential learning combined with authentic means of assessment. Our proposal is thus the use of students' ePortfolio and rubrics [19] for peer and self-assessment. Learners need to be informed from the beginning about the goals and the success criteria and standards they need to meet, so we need to make these clear from the beginning of the instruction, as well as give them the responsibility to participate in the formation of the evaluation themselves. The application of UDL principles in the development of curriculum and assessment can shift the focus from a "student deficit" approach to a "student success" approach.

Before teachers start the design of a lesson plan or scenario it's useful to have a clear idea of what the lesson is about, the educational objectives, and the barriers it addresses. Before the start of the design it is important to reflect on possible barriers for students, as well as ways to address them, thus catering for students' variability from the beginning. There is no 'average' student but there is an infinite variety of learners for whom lessons need to work. Variability in classes needs to be considered as an asset that allows the broadening of instructional design.

For example, if the goals are for students to understand literary elements and develop understanding of vocabulary, possible constraint could be the content itself. You need to consider this challenge and think about how to engage students, representing information in flexible and varied forms, and how to actively involve students with strategies to make meaning. You might also want to consider the use of an ePortfolio as means of assessment where students might provide the evidence of their choice in order to demonstrate the achievement of the educational goals and desired competences. Based on this approach the project learning template has been adapted following the UDL principles, so that teachers document and exchange their UDL scenarios.

In the context of COSMOS [20] and Open Discovery Space (ODS) projects a generic Learning Design template [21] has been developed from an analysis of the state-of-the-art, and more specifically the Learning Activity Reference Model (LARM), so as to ensure maximum consistency with regard to the constituent elements and the metadata needed for indexation. Furthermore, in order to help teachers document and exchange their practices, templates have been created for different teaching approaches and models, e.g. "Project-based learning", "Guided research model", "The learning cycle", "Problem solving". ODS is a portal where interested stakeholders can browse, create and exchange resources, lesson plans and educational scenarios. ODS can contribute to the creation, remix, and sharing of UDL-informed scenarios contributing to overcoming the barriers that teachers face [22].

IV. CONCLUSION AND RECOMMENDATIONS

UDL requires collaborative planning amongst teachers with different curriculum knowledge and skills. ODS is a place to browse and build resources, lesson plans and educational scenarios collaboratively among teachers networks and we hope that the recommended approach will

contribute towards creating and sharing inclusive open educational resources.

ACKNOWLEDGMENT

This research has been undertaken under the Open Discovery Space and UDLnet: A Framework for Addressing Learner Variability projects funded with support from the European Commission.

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