TOWARD EFFECTIVE INCLUSION AT UNIVERSITIES AND COLLEGES: APPLICATIONS OF UNIVERSAL DESIGN FOR LEARNING

Khalaf Al'Abri
Sultan Qaboos University
SULTANATE OF OMAN
Kabri@squ.edu.om

Abstract

Almost everywhere in the world, higher education witnesses increasingly diverse student population which has become a challenge. Such diversity is looked up as a real problem that faces instructors at higher education. Indeed, numerous studies have shown that this issue has to be addressed properly by higher education institutions (universities and colleges) and therefore, work very hard if not to eliminate it, at least to decrease it. This means that all students regardless of their differences from the mainstream have to be included, taking their rights like the others.

At Sultan Qaboos University (SQU), the issue of diversity among students comes to classes in different fashions each semester. With students from all the regions of the Sultanate beside a number of them from around the world, classes at SQU see different types of students who possess almost unlike characteristics. As it is clear, the issue of diversity at SQU is not different from the other universities in the world. The main purpose of the paper was to deal with my classroom at Sultan Qaboos University, college of education in Oman as a case study using UDL. This paper presented the potentiality of applying what is called *universal design for learning (UDL)* in university courses. The revolutionary idea of UD worked to design spaces, products, and services that met the needs of the widest range of diverse individuals who used these services.

Key Words: Udl, diversity, inclusion

INTRODUCTION

Globally, higher education witnesses an increasingly diverse student population which has become a challenge (Pliner & Johnson, 2004). Organizations dealing with those students such as universities and colleges have to recognize such diversity and plan to engage and include all students regardless of their differences from the mainstream. Accordingly, instructors in higher education need to understand the necessities of diversity in the classroom and try productively to vary and adopt their practices (Pace & Schwartz, 2008). They need to provide all students fair access to information and opportunities to learn. Using a variety of teaching and classroom practices that are usable by all students is seen as a way to ensure that all students' differences in learning styles, backgrounds, disability and so on are recognized and included. Indeed, accessibility and usability of curriculum by all students are addressed by the approach of Universal Design for Learning (UDL), which will be the focus of this paper.

The main purpose of the paper is to deal with a classroom at Sultan Qaboos University, college of education in Oman as a case study using UDL. To address the case properly, the paper is divided into three main parts. The first part is the literature review in which the origins and nature of UDL are presented in general. Moreover, UDL principles are outlined to help in analyzing the case study. The second part gives a full description of the context of the classroom. Using the principles of UDL, the third part analyzes the case study in light of these principles.

Literature Review

The idea of Universal Design was first developed purposely for the field of architecture by an engineer called Rone Mace and his colleagues at North Carolina State University's Center for Universal Design (Rose & Meyer, 2002). The goal was to promote design for all by making products, environments, information, and systems

that are useable by all people (Burgstahler, 2006; Scott, McGuire, & Shaw, 2003). In other words, the revolutionary idea of UD works to design spaces, products, and services that meet the needs of the widest range of diverse individuals who use these services. Indeed, diversity is considered as an essential element in the principles of UD (Kortering, McClannon, & Braziel, 2008). This leads to confirmation that UD aims to ensure accessibility by the greatest number of diverse potential users of a particular service. To guide the designing of such accessible products, the framework of the seven principles of UD was established (Scott et al., 2001), which will be explained in more details later on.

Then, after having been successful, UD principles have been adapted and adopted by various fields. According to Rose and Meyer (2002), education has been one of the first fields to use UD in order to reflect the diversity of its population and promote inclusion of all students. Since that time, educators have termed the concepts such as Universal Design for Learning (Rose, 2001) and Universal Design for Instruction (Scott et al., 2001, 2003). This section has indicated the origins of UD and where education has stemmed the idea of UDL. The next section will present the principles of UD.

UD Principles
A group of experts at the Center for Universal Design at North Carolina State University came up with seven principles for the universal design of any product or environment (CAST, 2001). These principles are flexible and thus can be applied and implemented in other fields, depending on the needs of each field (Rose, 2001). Educators coined theses principles and made them appropriate to educational contexts. This section outlines these principles briefly and gives an example of each one generally. At this stage of the paper, their application in education will not be mentioned, as it is going to be analyzed and described at the end of the paper in the analysis section. The seven principles are:

1. Equitable Use (CAST, 2001).
   The design provides the same means of use for all people by avoiding discrimination for any user. This principle suggests that the design should be accessible and fair for all users. A good example is that of power doors with sensors at entrances that give equitable access for all people.
2. Flexibility in Use (CAST, 2001).
   The design has a flexible choice in methods of use. To exemplify, ATM bank machines have different methods of giving feedback: visual, tactile, and audible which suit diverse users with diverse abilities.
3. Simple and Intuitive (CAST, 2001).
   The use of the design is easy, straightforward, and consistent to all users. It eliminates unnecessary complexity. A good example is an electronic devise with clear and intuitive control buttons.
4. Perceptible Information (CAST, 2001).
   In the design, the necessary information is communicated effectively to the user regardless of his or her sensory limitation. For instance, redundant cueing such as voice communication and signage in airports and train stations is a clear product applying this principle.
5. Tolerance for Error (CAST, 2001).
   "The design minimizes hazards and the adverse consequences of accidental or unintended actions". This principle can be exemplified by educational software that provides guidance when the student makes an inappropriate selection.
6. Low Physical Effort (CAST, 2001).
   People use the product efficiently and comfortably with a minimum of fatigue. The design here allows users to maintain a neutral body position. A good example of this principle is touch lamps operated without a switch.
7. Size and Space for Approach and Use (CAST, 2001).
   Appropriate size and space are provided for approach, reach, manipulation, and use regardless of the user's body size, posture, or mobility. Wide gates at subway stations are an example of employing this principle.

UD in Education
As noted earlier, UDL is based on acknowledging learner differences and the diversity of student population in schools (Meyer & Rose, 2005; Rose & Meyer, 2002). It is a framework that helps instructors to create more interesting learning opportunities for every learner regardless of his/ her background, learning style, abilities,

and disabilities. This section looks at why UD is needed in education and then elaborates how UD can be applied in education. According to Hitchcock and Stahl (2004), UDL as an approach in education was grounded genuinely in prompting healthy environment for students with disabilities to perform well in their learning (see also Scott, McGuire, & Shaw, 2003). However, UDL has then been developed to design instruction, materials, and course content that fit all diverse students of all learning styles without the need for adaptation or retrofitting (Coyne, Ganley, Hall, Meo, Murray, & Gordon, 2006). Indeed, the key feature of UDL is the encouragement of equal access, participation, and engagement to learning for all learners. Compared to "one size fits all" approaches, which arguably do not fit anymore in education, UDL recognizes the unique needs of every learner (Coyne et al., 2006). Accordingly, UDL does not mean the creation of a universal design for all learners that can be used in any classroom, but it suggests the designing of curriculum that maximizes accessibility for all and minimizes learning barriers.

If UD is so important to learning, how is it applied in education? According to Coyne et al. (2006), UDL is a set of principles and techniques that help instructors to design inclusive instructional methods and accessible materials that are flexible enough to accommodate learner differences (see also Rose & Meyer, 2002). It reflects an awareness of the unique nature of each learner and the need to address differences. To elaborate, the major goal of UDL is to make curriculum accessible to a wide group of diverse students with a wide range of learning styles, abilities, and preferences. Implying accessibility suggests that curriculum should be flexible to advantage all students with or without disabilities.

Another Framework of UDL Principles

Beside the seven principles of UD, Rose and Meyer (2002, p. 75) described a framework of UDL consisting of three principles to guide teachers in designing curriculum. The framework confirms that UDL is about providing multiple means of presentation, expression, and engagement. The first principle implies that information and ideas are presented to students in multiple ways. A university instructor, for example, offers documents in multiple electronic formats (HTML, RTF, PDF, etc.). The second principle suggests that students should be given multiple ways to express their comprehension and mastery of what they know. For instance, a professor gives students the opportunity to choose the way for doing a project. These choices are an oral presentation, written essay, a practical study, or a group project. In this case students can choose one of these alternative ways to express their mastery of the topic provided by the professor. Finally, the third principle makes teachers think of providing multiple opportunities for student engagement. Such engagement can be achieved by tapping into learners' interests, offering appropriate challenges, and increasing motivation.

The context

This paper used case study as a research methodology to look at the application of UDL at universities. The case was my classroom. It was a graduate course in the school leadership diploma program at college of education at Sultan Qaboos University. This course was called "introduction to educational leadership theories" in which students learn the fundamental leadership concepts and engage with leadership theories in their readings. The contact hours of the class were two times a week with 2 hours each. In this class, I had 44 students who were with very different sets of skills, life experiences, abilities, and learning styles.

Ladies represented 40 percent of the class, while the rest were men. The age of the group ranged from 26 to around 40, all of whom who were in leadership positions in their schools coming to do diploma in school leadership. There was a heterogeneous mix of Arabic dialects among the class, as the students came from the eight regions of the Sultanate of Oman. At the same time, 6 students out of the 44 were from 3 different Arab Gulf countries who had different backgrounds and different school leadership experiences. In terms of disabilities, a student had a moving disability in which he was using a wheelchair, another one had little deafness and another one had some blindness. Overall, this classroom was a diverse one in terms of students' culture, linguistics, experiences, abilities, skills, knowledge as well as learning styles.

In the following section of this paper, my classroom context will be analyzed in light of the UDL principles.

Analysis
Why UDL in My Classroom?

Having a close look at the student population of my classroom, it was characterized by diversity. 40 per cent of the students were above 35 years old. Their school leadership experience and positions varied significantly. What was more was that their background, family class, sex, regions, disability, skills, and learning styles made the class more diverse.

Considering this classroom, the lecturer recognized that using the traditional way of lecturing and "one size fits all" approach was not suitable to such a mix of heterogeneous classroom (see e.g. Pliner & Johnson, 2004). Besides, the assessment methods that I was following strictly by assigning weekly reflective journals, giving quizzes, and administering in-class examinations did not work properly. It is was not easy to include all those students and planed properly for them using the typical way of only giving lectures (Higbee, Chung, & Hsu, 2008). My decision was then to use UDL basic ideas and principles in order to meet the needs of all learners and maximize their learning including those students with disabilities. To do so, I designed my classroom to be inclusive by providing accessible and usable curriculum and pedagogies (Scott et al., 2003) according to the UDL framework. In my design, I planed and adapted classroom practices and material to meet all students' needs, not the opposite, that is, that students make the required adaption (Coyne et al., 2006).

Some may argue that UDL is better for school contexts rather than university. However, the increasing diversity in such university classrooms pushes instructors to search for alternative ways of including all learners (see e.g. Higbee et al., 2008). Indeed, the idea of this paper was to confirm that UDL worked effectively to overcome the obstacles of diversity in university teaching and learning. The next sections deal with application of UDL in course materials, instruction and assessments.

Course Content and Materials

Traditionally, I used to assign a book called *School Leadership Theories* and students had to go through the chapters of the book. As a theoretical course, I had nothing more than this book for this course as learning materials.

Applying the principles of UDL, the class materials and the course content had changed to provide alternative ways and formats. I started using the Moodle on which I put my lectures, notes, directions, and any material related to the course in multiple electronic ways. Through the Moodle, electronic textbooks were offered and sometimes printed materials were converted into an electronic format. It also allowed me to offer documents in multiple electronic formats (HTML, RTF, PDF, etc.) so the classroom materials were accessible to diverse learning needs and styles. According to Blair (2006), when materials were presented in electronic formats, the specific learning needs of students were met as these formats allowed modifications in font size, style or colour. Moreover, recording lectures and making them available in the Moodle made materials accessible to students with vision and hearing impairment, as well the other students at any time.

Indeed, using the Moodle helped me to offer varied representation of the course content and materials and that could allow the students to learn in their preferred means. Furthermore, all students had become able to accesses materials from their own computers at anytime they want. The flexibility, accessibility and usability of the class presentations were made easier with the Moodle, regardless of the learners' sensory abilities or other life pressures. Another benefit is that the Moodle provided multiple means of engagement for students. They could chat with each other and with me too through the icon of discussion. In this way, interactions between students and me, and students themselves helped students to engage productively with the course materials.

Instruction

Before using UDL, I used to introduce topics by reminding students about the previous classes and then keep lecturing till the end of the class. As mentioned above, standing in front of the class and being a lecturer for the whole two hours of the class was the only way of my instruction. By the end of the class, I normally assigned some homework or readings to be done by the next meeting.

Using UDL approach to learning, a variety of instructional methods was introduced in each lesson in a more flexible and accessible way for the wide range of diversity in the classroom. The teaching methods were now in a straightforward and predictable manner. My way of instruction had changed totally to start breaking the two hours into smaller portions. I stared normally by warming up and introducing the new topic which takes around 10 minutes. Students at this stage were engaged in different ways in each lesson. As an example, questions were asked to check their background about the new topic. The next step was to lecture for around 40 minutes. I used different materials like PowerPoint presentation, diagrams on leadership theories development, whiteboard, and videos. Sometimes to change, another professor was invited to come and give a short lecture on a certain topic that of his research interest.

To engage students in alternative ways, they were divided into small groups of three or four to think how they could apply the topic practically in their schools. We spent around 10 to 15 minutes for collaborative group discussion. Each group then had to stand at the front of the class and present their discussion which takes 30 minutes. Indeed, working in small groups and presenting gave students extra opportunities to learn by interacting with their colleagues. The group work also helped me to engage all students and particularly those who were attentive during the lecture. Alternatively to small group work, in each lesson I tried to vary my teaching practices to include, for example, whole group discussion, active learning, and problem solving activities in order to maximize learning opportunities for all students and to promote inclusiveness.

The last ten minutes of the class, I concluded the class and assign an interactive homework task to keep students engaged with the topic. Considering the way of breaking the class into segments, students were engaged with the class and not forced to listen only for two hours for a lecture. The variety of activities I offered to students helped them to express their learning in different ways and enhance gains of new knowledge. In general, the multiple teaching methods worked effectively to engage all my students in the classroom and force them indirectly to demonstrate what they have learned.

Assessment

I recognized that using only a typical final exam and quizzes with such diverse students in my classroom would not accurately reflect what my students had learned. It was not the appropriate way as some students were good test-takers, while others were not. Through my teaching experience, I had discovered that some students expressed themselves well in writing, others expressed themselves very well orally, and some others through practical projects. Accordingly, UDL guided me to give students alternative ways of assessment to express themselves rather than exclusively traditional quizzes and exams.

For this course, I offered students the choices of doing a written essay, a practical study or a presentation. They had to choose only one of those options and in fact, they could also work in groups of 3 or 4. Most importantly, students had to choose their own topics which should be related to the development of school leadership theories, but of course they needed my approval at the end. This task equaled 60 per cent of the whole grade of the course. All assessment choices were equal in terms of quality, content and grades.

The second task was to keep a weekly reflective journal which was collected twice in week 6 and 12 of the semester. Students were given the choice on how to do this task. The total grade for this task was 10 per cent. Besides, students were encouraged to interact in the class and engage with others; I allocate 10 per cent of the total grade for my observation of students' engagement. As it was the standard of the university, a final exam has to be administered to students. To reduce its impact on students, a total of 20 per cent of the course grade was assigned for the final exams.

Clearly, students were provided with multiple ways of expressing what they had learned in the course. UDL helped me to design various assessments that could be adjusted to many individual differences.

CONCLUSION

As a new paradigm in education, UDL worked to create equal access, participation, and engagement to learning for all learners, including those with disabilities. Considering my classroom at Sultan Qaboos University, it was a mix of heterogeneous student population that required from me to pay attention to such differences and then

planed to promote inclusion of all students. Indeed, applying UDL had been my intention to remove diversity barriers to learning and include all students. The paper had showed how UDL principles were applied to my instruction, course materials, and assessment. My course had shifted from "one size fits all" curriculum to provide accessible design to all students. To do so, the course content and materials were provided in alternative ways and formats, a variety of instructional methods was introduced, and alternative ways of assessment were offered. Without doubt, this shift had made the course fitting all diverse students of all learning styles without the need for adaptation or retrofitting.

WJEIS's Note: This article was presented at International Conference on New Trends in Education and Their Implications - ICONTE, 26-28 April, 2012, Antalya-Turkey and was selected for publication for Volume 2 Number 2 of WJEIS 2012 by WJEIS Scientific Committee.

REFERENCES

Burgstahler, S. (2006). *Equal access: Universal design of instruction*. Seattle: DO-IT, University of Washington. Available from http://www.washington.edu/doit/ Brochures/Academics/equal_access_udi.html

Center for Applied Special Technology (CAST). (2001). *Universal design for learning.* Retrieved October 10, 2009, from http://www.cast.org

Coyne, P., Ganley, P., Hall, T., Meo, G., Murray, E., & Gordon, D. (2006). Applying universal design for learning in the classroom. In D. H. Rose & A. Meyer (Eds.), A *practical reader in universal design for learning*. Cambridge, MA: Harvard Education Press.

Hitchcock, C., & Stahl, S. (2004). Assistive technology, universal design, universal design for learning: Improved learning outcomes. *Journal of Special Education Technology*, 18, 45-52.

Kortering, J., McClannon, W., & Braziel, M. (2008). Universal design for learning: A look at what algebra and biology students with and without high incidence conditions are saying. *Remedial and Special Education*, 29 (6), 352- 363.

Meyer, A. & Rose, D. H. (2002). The future in the margins: The role of technology and diability in educational reform. In D. H. Rose, A. Meyer, & C. Hitchcock (Eds.), The *universally designed classroom: Accessible and digital technologies*. Cambridge, MA: Harvard Education Press.

Pace, D. & Schwartz, D. (2008). Accessibility in post secondary education: Application of UDL to college curriculum. *US-China Education Review*, 12 (5), 20-26.

Pliner S. M. & Johnson, J. R. (2004). Historical, theoretical, and foundational principles of universal instructional design in higher education. *Equity & Excellence in Education*, 37 (2), 105-113.

Rose, D. H. & Meyer, A. (2002). *Teaching every student in the digital age: Universal design for learning.* Alexandria, VA. Available from http://www.cast.org.

Rose, D. H. (2001). Universal design for learning: Deriving guiding principles from networks that learn. *Journal of Special Education Technology,* 16(2), 66-67.

Scott, S. S., McGuire, J. M., & Shaw, S. F. (2001). *Principles of Universal Design for Instruction.* Storrs, CT: University of Connecticut, Center on Postsecondary Education and Disability.

Scott, S. S., McGuire, J. M.,&Shaw, S. F. (2003). Universal design for instruction: A new paradigm for adult instruction in postsecondary education. *Remedial and Special Education,* 24(6), 369-379.