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The Influence of Project-Based Learning and Outcome-Based Education: Interior Design Tertiary Students in Focus

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***Abstract*—**Technology has been developed dramatically in most of the educational disciplines. For instance, digital rendering subject, which is being taught in both Interior and Architecture fields, is witnessing almost annually updated software versions. A lot of students and educators argued that there will be no need for manual rendering techniques to be learned. Therefore, the Interior Design Visual Presentation 1 course (ID133) has been chosen from the first level of the Interior Design (ID) undergraduate program, as it has been taught for six years continually. This time frame will facilitate sound observation and critical analysis of the use of appropriate teaching methodologies. Furthermore, the researcher believes in the high value of the manual rendering techniques. The course objectives are: to define the basic visual rendering principles, to recall theories and uses of various types of colours and hatches, to raise the learners' awareness of the value of studying manual render techniques, and to prepare them to present their work professionally. The students are female Arab learners aged between 17 and 20. At the outset of the course, the majority of them demonstrated negative attitude, lacking both motivation and confidence in manual rendering skills. This paper is a reflective appraisal of deploying two student-centred teaching pedagogies which are: Project-based learning (PBL) and Outcome-based education (OBE) on ID133 students. This research aims of developing some teaching strategies to enhance the quality of teaching in this given course over an academic semester. The outcome of this research emphasized the positive influence of applying such educational methods on improving the quality of students' manual rendering skills in terms of: materials, textiles, textures, lighting, and shade and shadow. Furthermore, it greatly motivated the students and raised the awareness of the importance of learning the manual rendering techniques.

***Keywords*—**Manual renders, outcome-based education, project-based learning, personal competences, and visual presentation.

I. Introduction

INTERIOR design career lately has dramatically changed and developed. Reference [1] stated that over the last 20 to 30 years it has started to become as a well-known profession. The education of the professional interior designer aims of providing the highest levels of creativity and skill in designing for our society and culture [2]. The author believed and agreed with opinions of both [2] and [3] that in order to achieve these goals, we must well prepare future designers to be capable of practicing and connecting their academic knowledge and cognitive skills with the real life context. As [2] and [3] demonstrated, the key to accomplish these goals lies in educational transformation.

In line with the explanation given above, the ID program's mission in Prince Sultan University (PSU) aims to educate students who are prepared for professional interior design practice immediately following graduation. Key program goals are: to develop skills in applying principles in wide variety of projects; to require knowledge of space planning, materials, textiles, lighting, structures and codes [4]. Additionally, the program intends to provide students with opportunities to exhibit their work, to observe, and to interact with the professional design community.

The ID133 has been chosen from the first level of the ID undergraduate program, as it has been teaching it six years continually. This time frame will facilitate sound observation and critical analysis of the use of appropriate teaching methodologies. Nevertheless, the computer aided design courses and digital rendering programs have been developed dramatically; the researcher (ID133 instructor) argued stating that the quick sketching skill and manual rendering techniques are tools which still have a significant importance value to any interior designer. For example, those skills allow the interior designer to illustrate their ideas, concepts, and thoughts quickly and professionally in front of their clients [5], [6]. Reference [7] emphasized that manual drawings remain the appropriate medium for the purposes of recording or generating ideas.

The ID133 course objectives are: to define the basic visual rendering principles, to recall theories and uses of various types of colours and hatches, to enhance the learners' awareness of the value of studying manual rendering techniques, and to prepare them to present their work professionally. The learners are multi cultural female, majority are Arab students aged between 17 and 20. At the outset of the course, the majority demonstrated negative attitude lacking both motivation and confidence in their manual rendering skills.

This research focused on investigating the positive influence of combining two educational methodologies, PBL and OBE, and implementing them on ID133 students. Employing the quantitative and qualitative approaches, the results reached were compared to the results collected after the implementation of the traditional teaching methods. This paper lays the focus on the validity of PBL and OBE teaching strategies in enhancing the quality of teaching and learning in this particular given course over a span of an academic semester.

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II. Teaching and Methods

At the beginning of each semester most of the ID133 students have the same initial negative attitude towards the course. They were not interested enough in such a manual technical course. Additionally, their major exam's grades were low and the quality of their manual rendering work was very poor. Reflecting on such a negative phenomenon led to ask several questions to the instructor herself, to senior students, and to faculty members whose courses follow the course at the same major in order to reach the reasons beyond the learners not taking this particular course seriously?

Through previous investigations, the instructor concluded that the main problem is the students' lack of motivation that was due to three reasons. First, the course was marginalized from some of the learners' and teachers' perspectives compared with their other design and working courses. They assumed that it may not be that important as they won't use it much later. Second, the lack of awareness of the value of learning such a manual technical aspect while nowadays almost everything became computerised [5], [8]. Third, the manual rendering of any perspective without visualising the real space is a relatively difficult task. This led to student's passive attitude, their overreliance on the instructor for support, and consequently their scoring of initial low grades in course work/ Midterm.

Traditional teaching methods had been used at the beginning of the semester which included: lecturing, power points presentations, assignments, one-to-one feedback, and tutorials...etc. After reviewing the Midterm's drawings and grades, seeking feedback from peer reviews, and conducting informal interviews with the learners; an urgent research for more effective teaching methods was needed. Reference [9] stated that: Lecturing is without doubt effective for transmitting information but if we wish to develop thinking skills, problem solving abilities and lifelong learning skills a more student-centred approach must be taken into consideration. A combination of two educational theories, PBL and OBE, had been chosen and implemented to engage the learners, encourage individualistic characteristics, and accomplish the course intended learning outcomes.

A. Project Based-Learning (PBL)

Reference [12] defined PBL as a student-centred instructional approach used to encourage active and deep learning by involving students exploring their real-life context with a collaborative environment aspect. Furthermore, it is particularly appropriate as it exposes students to experiential learning in which they experience a feel for the activities involved in the property profession [13]. At this point, the students had a project from their own choice designed to increase their motivation and help bridge the gap between theories and practice. Several studies [9]-[11] had been explored and emphasized the positive influence of the PBL in terms of promoting critical thinking and encouraging autonomous learning. Therefore, a questionnaire was distributed to 27 ID students. The learners were provided with three different options for their final project choice: 1) rendering the same traditional project which is to imitate any 2D image from a list of choices provided by the instructor, 2) rendering a design of their own in another relevant course, and 3) rendering 3D interior space of their choice from their local environment. A majority of students (70.4%) chose the last option as shown in Table I. They predicted that taking pictures from real life interior space would facilitate their realistic rendering of materials, textures, and improve light and shade effects. However, only few students (22.2%) preferred rendering a project from their own design in another relevant subject. They claimed that it would save their time, effort, and money by doing only one project divided into two parts in two different courses. On the other hand, a minority of students (7.4%) selected the first option because they believed that the instructor choices would be better than their own. According to the results from Table I, the instructor and the learners decided to adopt the majority opinion.

TABLE I
ID133 Students Survey Result towards Preferable Final Project Rendering Options

ID133 Students Opinion of Final Project (PBL)	1. Rendering a 2D Image	2. Rendering a project from a relevant subject	3.Rendering 3D real life interior space
Students Percentages	7.4%	22.2%	70.4%

B. OBE

Additionally, [14] clarified that OBE is focusing and organizing everything in an educational system around: what is essential for all students to be able to do successfully at the end of their learning experiences. References [14] and [15] explained that the OBE features as following: active learners, continuous assessment, critical thinking, reflection, action, integration of knowledge, and learning relevant/ connected real life situations. Consequently, the instructor implemented the OBE into the ID133 course in order to increase the students' confidence, encourage students-centered learning approach, and prepare them to their professional career. By the mid of the semester, the instructor had randomly informal interviews with some of the ID133 students asking them several questions about their needs, capabilities and the course outcomes' perspective from their point of view. Moreover, peer reviewers from the field provided the researcher with valuable feedback before and after the researcher's intervention.

At this point, the instructor decided to apply the OBE method to address the problem in addition to the PBL approach. As [16] suggested that, in order to reach the intended learning outcomes, it is important to produce certain objects, such as field trip experiences. Reference [17] also emphasized that the preparation of the interior architectural students for their real life practice are structured by the human relationships within its surrounded space. A field trip was organized in order to create opportunities for group learning and promote virtual learning environments (VLE) [18]. The field trip was organised to the "Ritz Carlton Hotel" in Riyadh, KSA in collaboration with the hotel educational centre. Students were split into three groups led by three team leaders.

They took a lot of photos and visualized the real interior spaces with focusing on the light, shade and shadow, textures and materials. Each student selected only one interior perspective from her own choice to be her final project and to be manually rendered with markers. By the end of the semester, an internal exhibition called "*Visualize your Space*" organized by the learners. It was held at PSU women campus to display their final projects. A prize was awarded to the best final three projects as incentives. An extraordinary positive feedback was given from the audiences to the learners about their distinguish outcomes work and the realistic 3D effects they successfully achieved manually.

The efficacy of this intervention has been assessed through both quantitative and qualitative approaches. The grades of the major exam, before the action plan, have been compared to the results of final project at the end of the semester and after the deployment of action plan. Furthermore, a qualitative method has been applied through the analysis of the learners midterm work versus their final project work in terms of the quality of applying realistic 3D effects, materials, textures, light and shade and shadow.

III. Results and Discussion

The data results of the research were divided into two parts:

A. Quantitative Approach

The first included the quantitative results which represented as a comparison between the ID133 learners' major exam grades versus their final project results. This comparison as shown in Fig. 1, displayed diagram (A) which indicated the very low major exam results. The diagram illustrated the students' grades as following: only 3.7% students achieved (A) level, while; 29.6 % got (B), 44. 4% got (C), and 22. 2 % got (D).

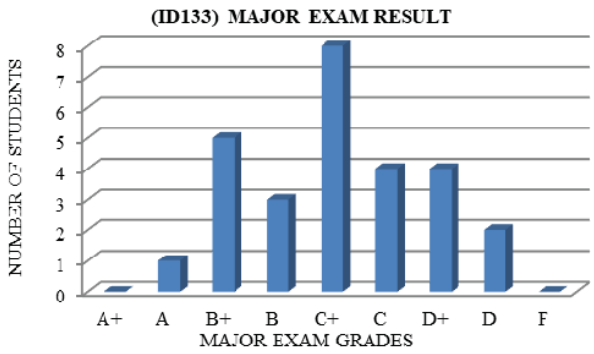

Fig. 1 Diagram "A" illustrated ID133 Major Exam Grades

In contrast, in Fig. 2, diagram (B) showed the high results of the ID133 students' final project grades. This diagram in Fig. 2 displayed the results as following: 63% students achieved (A) level; however only 33.3% got (B), 3.7% got (C), and likely 0% got (D).

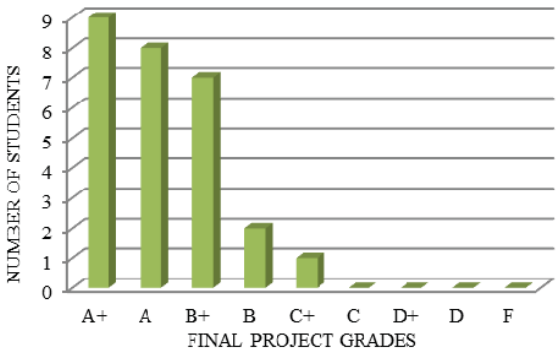

Fig. 2 Diagram "B" illustrated ID133 Final Project Result

B. Qualitative Approach

After, the undesirable result of the ID133 students' major exam; the researcher recognized that providing the students with traditional methods was absolutely not enough to accomplish the intended learning outcomes and motivate the learners.

Through observation, the instructor noticed that neither the midterm's drawings meet the required standard, nor the results and outcomes. Based on peer reviews from the colleagues, they emphasized that most of the students' work was missing the depth, light, shade and shadow, and the 3D realistic effectiveness. Also, the informal interview which was conducted with some students for follow-up revealed that the learners themselves were absolutely not satisfied about their both work and grades. Fig. 3 showed two samples of the highest and lowest students' major exam outcomes. It illustrated the low quality of textures, materials, light, shade and shadow of a kitchen perspective that had been manual rendered by marker colours. Additionally, majority of the students work was out of scale and proportion.

Fig. 3 Samples of ID133 major exam outcomes (highest and lowest)

Incorporation of the OBE provided the learners with a great opportunity to take responsibility for their own learning, and applied the PBL approach as well caused a vital change in the role of the lecturer from transmitting information to students to coaching and facilitating learning. As, [9] clarified and limited the role of the tutor in the PBL method: time allocation, project scope delineation, and tutorial responsibility which would develop key skills such as communication and teamwork. Consequently, [16] and [19] emphasised that student can only become proficient in their

career by practicing through experiential learning approach; something which the traditional teaching methods often fails to do.

Fig. 4 Samples of the ID133 students' final project winners

In Fig. 4 which demonstrated the huge difference of students' improvement work after applying both the PBL and the OBE teaching and learning methods which enhanced the quality of the ID133 final project's outcomes. Throughout the intervention, students succeeded in applying light, shade and shadow to each chosen interior perspective using marker colours. A better sense of realistic materials was shown in their final results. Furthermore, through observation, the instructor has noticed important changes at many scales have occurred such as: students' engagement was enhanced; their attendance rate was highly increased, their confident participation had been dramatically increased in constructive discussion. Also, the learners had self confidant in the manual rendering skills and presenting their work professionally.

At the end of the semester, an exit survey on E-learning Management System (LMS/ Moodle) was given to 27 of the ID133 students which included 10 questions. Although, only few questions have been selected to be analyzed which were more relevant to this paper topic. The course exit survey was to grasp the progress achieved by the end of the intervention and reach further priorities for improvement from students' perspective. For example, in question 1 which indicated that (73%) of students were strongly agree that they could define the basic visual rendering principles, (23%) of them agreed, while (1%) disagreed and likely (0%) strongly disagreed. When students answered if they can apply various types of colours and hatches through realistic rendering materials, textures and finishes, (65.4%) of them strongly agreed, (34.6%) agreed. But, (0%) of students were strongly disagreed and disagreed. In question number 3, (54%) of the learners strongly agreed that they could analyze relevant manual rendering examples, (42.3%) of them agreed, and only (3.8%) disagreed. The online survey has been conducted exploring students' preferable learning and teaching method in such a comprehensive course. For instance, they had been asked if the PBL helped them to improve their manual rendering skills. The result indicated that 77% students' engagement strongly agreed, 23% of them agreed. On contrast (0%) of the learners disagreed.

IV. Conclusion

Teaching and learning methods need to be developed to enhance visualization skills for all learning styles for in ID students [19]. Applied both OBE and PBL, encouraged autonomous students and developed students-centred approach. The instructor personally was impressed not just by what the students chose to draw and manually render but also by what they did not choose to draw and render [20].

Furthermore, the field trip and experiential learning highly motivated the learners to manually rendering their final project that were from their own choice, encouraged group discussion, and developed personal competences. Also, at the internal exhibition, students had a great opportunity to be provided one-to-one with an extraordinary positive feedback from the audiences.

However, the sample of this action plan was small, thus the researcher has a plan to extend the number of the students and distribute questionnaire on a large sample size. The sample will include architectural students as well as ID students to enable measuring the differentiation in their preferable learning style and enhance teaching methods and approaches. Additionally, an external exhibition is planned to be organized by both students who already finished the course and the new applicants to encourage verbal interaction, develop group communication between (student to student, student to instructor, and students to their community), and enhance personal competences [21].

References

[1] Martin, C. (1998). Professionalization: Architecture, interior decoration, and interior design as defined by Abbott. Master's thesis, Department of design, University of Minnesota.
[2] Alkhalidi, Abdul Samad. Future Directions in Interior Design Education. Journal of leadership and international development (1). University Of Sharjah. http://www.scholarpractitionerjournals.com/article/future-directions-interior-design-education. Access April, 2017.
[3] Guerin, Denise& Thompson, Jo Ann, (2004). Interior Design education in the 21st century, Journal of Interior Design, V30, Number 1, 2004.
[4] PSU Bulletin, 2015-2016, "Prince Sultan University".
[5] Rory, Stott, "The Computer vs. The Hand In Architectural Drawing: Arch Daily Readers Respond", May, 2015
[6] http://acad, ia.org/features/H76XXP
[7] https://heumanndesigntech.wordpress.com
[8] Hillard, Sylvester, 2011: All about Computers: A Guide for Teens and Adults.
[9] Donnelly, R. Fitzmaurice, M, "Collaborative Project-based Learning and Problem-based Learning in Higher Education: a Consideration of Tutor and Student Role in Learner-Focused Strategies". In G. O'Neill, S. Moore & B. McMullin (eds) Emerging Issues in the Practice of

University Learning and Teaching (pp.87-98). Dublin, AISHE/ HEA, 2005.
[10] Gregory Galford, Susan Hawkins, and Mark Hertweck, May 2015. Problem-Based Learning as a Model for the Interior Design Classroom: Bridging the Skills Divide between Academia and Practice
[11] Farahnaz Movahedzadeh, Ryan Patwell, Jenna E. Rieker, and Trinidad Gonzalez, 2012. Project-Based Learning to Promote Effective learning in Biotechnology Courses.
[12] Lee Hong Sharon Yam, and Peter Rossini, "*Implementing a Project-Based Learning Approach in an Introductory Property Course* ", 16th Pacific Rim Real Estate Society Conference Wellington, New Zealand, January 2010.
[13] Ferre Laevers, "*Making care and education more effective through wellbeing and involvement. An introduction to Experiential Education*." Research Centre for Experiential Education – University of Leuven – Belgium, February 2015.
[14] W. Spady, *"Outcome-based education: Critical issues and answers. Arlington",* VA: American Association of School Administrators, 1994
[15] http://drjj.uitm.edu.my/DRJJ/CONFERENCE/UPSI/OBEKillen.pdf
[16] Innovative Higher Education, Vol. 24, No. 4, summer 2000, Active Learning Techniques versus Traditional Teaching Styles: Two Experiments from History and Political Science, J. Patrick McCarthy and Liam Anderson.
[17] Symes, M. Architectural Education and Architectural Careers: The view of students in three countries. In M. Bulos and N. Teymur (Eds.), Housing: Design, Research, Education (1993) (pp. 255-266). Avebury: Ashgate Pub. Ltd.
[18] Virtual Learning Environments as a Supplement to Traditional Teaching Joana LIPEIKIENE˙ Institute of Mathematics and Informatics, Vilnius Pedagogical University Goštauto str. 12, LT-2600 Vilnius, Lithuania e-mail: joanal@ktl.mii.lt Received: April 2003
[19] Ozgen Osman Demirbas, "*The Relation of learning Styles and Performance Scores Of the students in Interior Architecture Education*", September, 2001.
[20] http://uir.unisa.ac.za/bitstream/handle/10500/1529/03chapter2.pdf
[21] Wender, W. V. & Roger, J. The Design Life Space: Verbal Communication in the Architectural Design Studio. Journal of Architetural and Planning research, 12 (4), (1995), 319-336