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BEYOND COMPUTER LITERACY: TECHNOLOGY INTEGRATION AND CURRICULUM TRANSFORMATION

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Personal computers, the Internet, smartphones, and other forms of information and communication technology (ICT) have changed our world, our job, our personal lives, as well as how we manage our knowledge and time effectively and efficiently. Research findings in the past decades have acknowledged and affirmed that the content the ICT medium carries is as important as the ICT medium itself. These studies also added a third constituent to the structure of ICT usage and integration; that is the pedagogical approach of teaching and learning. One of the modern ICT trends of organizations involves the incorporation and integration of a blended approach of teaching and learning; which combines the traditional face-to-face instructor-led method with ICT-based online teaching and learning environment. This quasi-experimental research study was deployed to evaluate and identify the effect and usefulness of a blended pedagogical approach of teaching and learning on students’ academic achievement, motivation, and attitudes. A total of 128 (i.e., 64 experimental group and 64 control group) undergraduate students in the College of Education (COE) at Kuwait University (KU) participated in this study. The results revealed that the students enrolled in the experimental group were significantly outscoring their counterparts in the control group. They submitted projects with better quality; earned higher final grades; attended more online training courses; took more ICDL tests; and the majority attended all classes. These findings imply that the potential of a blended approach of teaching and learning is endless. It can produce robust teaching and learning environments and experiences. It can also reveal that teaching and learning with such method or strategy, while integrating and incorporating ICT tools, can be fun.

Keywords: Blended Learning/Teaching, Distance Learning/Teaching, Online Learning/Teaching, e-Learning/Teaching, Education, Higher Education

Introduction

Personal computers, the Internet, smartphones, and other forms of ICT have changed our world, our job, our personal lives, as well as how we manage our knowledge and time effectively and efficiently. With just few clicks we can: communicate with friends and colleagues all over the globe through e-mail or teleconferencing; organize our finances; study our curriculum; and even view the card catalog of a library for research purposes.

If we think we know and understand what “ICT” is, then we should consider Marshall
McLuhan’s beliefs when he stated forty seven years ago in his well-known book, Understanding Media: The Extensions of Man, published in 1964, that “the medium is the message”. He stressed that the form/type of a medium embeds itself within the message, causing the creation of a symbiotic correlation by which the medium affects how the message is recognized and understood. He believed and propositioned that the media themselves should be the core emphasis of the study, not the content they carry. Hence, McLuhan’s insight was that our society is influenced by the characteristics of the media used, not by the content delivered over them. McLuhan is also known for coining the expression “the global village” and predicted the World Wide Web almost thirty years before it was invented (McLuhan & Gordon, 2003).

However, McLuhan had no clue of knowing the paramount effect of ICT on humanity and our society as well. For that reason, McLuhan’s vision is partially true, because research findings in the past decades have acknowledged and affirmed that the content the medium carries is as important as the medium itself. These studies also added a third constituent to the structure of ICT usage and integration; that is the pedagogical approach of teaching and learning. This element has been proven to play a remarkable role in the success of any initiative concerning ICT usage and integration into education. Therefore, there is no doubt that ICT tools, the content they carry, and the pedagogical methods all together become the extension of us. They all drive the direction; hence, impacting our outcomes, including our developmental learning outcomes.

Objectives of the Study

With the upcoming deployment of ICT tools into PK-12 schools and higher education institutions across the State of Kuwait, the need for ideas and methods on using and integrating the technology efficiently and effectively is paramount. We need to balance between education and technological innovations and practical classroom concerns.

The study’s objective was to demonstrate a role model approach, a blended learning/teaching environment, on how to effectively and efficiently use and integrate ICT tools into teaching and learning. The research scrutinized and identified the impact and usefulness of such method on students’ learning and academic achievement as well as their motivation and attitudes. To that end the following questions were tackled:

1. Does the approach affect students’ learning and academic achievement?
2. Does the method impact students’ motivation and attitudes toward teaching and learning?

Assumptions and Limitations of the Study

The research assumed that this new pedagogical strategy for teaching and learning has a significant positive impact on students’ learning and academic achievement. It also predicted that the new model escalates students’ motivation toward education; and thus, affecting their attitudes regarding teaching and learning in this ICT/knowledge driven era. The study involved the application of a blended model of teaching and learning in only three sections (i.e., experimental group) of an academic undergraduate course entitled “Computing in Education 0840-235”. Whereas, another three sections (i.e., control group) of the same course were taught in a traditional manner. Other extents of exploitations were not included. A sample of 128 (i.e., 64 experimental group and 64 control group) female senior undergraduate students in the College of Education at Kuwait University were scrutinized and monitored only for this research because of the nature of the academic course of study that limits the number of students
enrolled in each section to 20-25 students in senior classes.

**Significance of the Study**

The Amir of the State of Kuwait, the Government, the National Assembly, as well as professionals, researchers, educators, administrators, parents, teachers, and students alike have all called for a national campaign/movement for reform in education—which is constantly in need of such developments and improvements. The push for better education and the willingness of the Government for better PK-12 schools and higher education institutions are encouraging. The Kuwaiti government provides all governmental public educational entities with their needs and necessities for teaching and learning in this global knowledge society, including ICT tools. So far, millions have been spent on acquiring ICT means in Kuwait for the cause of reforming education in the past decade. And, so much more will be spent in the near future. However, a little emphasis has been placed on how efficiently and effectively can we use and integrate such technologies into education. Therefore, the results of such research study can help presenting policy and decision makers as well as professionals working in the field of education—in the Arab Gulf Cooperation Council (AGCC) region, in general, and the State of Kuwait, in particular—with some commendable insights regarding the efficacy use and integration of ICT tools into education.

Nevertheless, more studies are needed to be deployed, on a national level, with larger samples in order to provide more pragmatic and experimental research proofs that reveal how efficiently and effectively ICT tools can be used and integrated throughout education. These breeds of research studies should focus profoundly on pedagogical trends and issues related to ICT, not only on ICT acquisition trends and issues.

**Literature Review**

This literature provides valuable information covering the role of a blended pedagogical method of teaching and learning in the effect of ICT tools and the content they carry on students’ achievement, learning outcomes, motivation, and attitudes.

A survey was developed by a team of faculty and administrators at a private institution in the Northeast of the United States (US) to focus on the impact of ICT as a value-added component of teaching and learning inside and outside the classroom. A structural equation research model was used to determine the effective assessment of teaching and learning with ICT. The study adopted a blended model for teaching and learning. The results of the research indicated that ICT is definitely a “lever”, ICT tools with a blended pedagogical method of teaching and learning helped in: arising students’ test scores in standardized tests; escalating students’ collaboration and communication skills; and increasing students’ motivation and engagement in their own learning and growth (Sandler, 2010).

The US’s National Center for Education Statistics (NCES) asserted that in 2003-2004 school year, about 30 percent of fourth-grade students attending public schools in the US did not achieve the grade-appropriate levels of literacy proficiency on national standardized tests. This insufficiency in reading development is known as the fourth-grade slump phenomenon and it happens during the transition from the lower (i.e., grade one-to-three) to upper (i.e., grade four-to-five) grades (Perie, Moran, & Lutkus, 2005). The phenomenon weakens the learning performance of students’ across disciplines and grade levels. ICT, however, has the potential to overcome the academic deficits caused by such phenomenon.

In light of this, a research study was conducted by O’Dwyer, Russell, Bebell, and Tucker-Seeley (2005) in Massachusetts in the
US on fourth-grade students from nine different school districts. The study investigated the impact/value of ICT use on students’ learning outcomes for writing proficiency. The research examined the effect of ICT use on students’ achievement in national standardized ELA tests. A total of 986 fourth-grade students from 55 classrooms participated in this research. A blended pedagogical method as a paradigm for teaching and learning was deployed. The results of the study showed that students with higher frequency of ICT use at school and home had greater total test scores in ELA and writing on the Massachusetts Comprehensive Assessment System (MCAS) ELA test.

Over the past decades, many research studies well-documented the achievement differences among students in schools located in different geographical locations such as urban, suburban, town, and rural regions. These achievement differences are attributed to curricular, instructional, and resource differences along with socioeconomic differences. This has been a significant problem in the educational systems worldwide, including the US. ICT has a promising potential to close the achievement gap by making it possible to provide high quality instructional materials and teaching environments to educationally disadvantaged regions.

With regard to this notion, a study was conducted by Cakir, Delialioglu, Dennis, and Duffy (2009) focusing on the impact of ICT, according to geographic location, on students’ achievement in the US high schools in a technology enhanced standardized learning environment called the Cisco Certified Network Associate (CCNA) program—a worldwide program offered by the Cisco Networking Academy to provide computer networking education to students at about 10,000 high schools, community colleges, universities, and nontraditional educational institutions in more than 150 countries. The program offers four courses taken in sequence.

The study implemented a blended pedagogical strategy for teaching and learning. It emphasized only on high schools. The curriculum, teaching materials, labs, simulations, and tests are developed centrally by Cisco Systems Inc. and the Cisco Learning Institute. Cisco’s instructional model combines face-to-face instruction (i.e., traditional learning environment) with online curriculum, standards-based testing, and instructional materials distributed over the Internet (i.e., online learning environment). Thus, Cisco provides a blended learning environment model which can bring the strengths of both learning environments into instruction and can increase students’ achievement and satisfaction; hence, improving students’ learning.

A total of 4,670 students from 386 high schools participated in the study and included in the final analysis. The Hierarchical Linear Modeling (HLM) method was used for a multilevel analysis approach. The results showed that students located in schools from different geographic locations and class sizes achieved equally well in standardized tests in the networking program. Accordingly, the findings imply that the use of ICT tools along with face-to-face instruction (i.e., a blended pedagogical method for teaching and learning) can provide a strategy for reducing and closing the achievement gap among students/schools located in different geographic regions and from different class sizes caused by differences in curriculum and instructional resources. The research findings also asserted that students’ achievement was mainly affected by students’ level factors such as gender, prior academic ability, prior computer knowledge, and motivation (Cakir et al., 2009).

Ololube, Eke, Uzorka, Ekpenyong, and Nte (2009) undertook a study investigating the impact of ICT on faculty’s teaching and students’ learning in two universities in the Niger Delta of Nigeria. A total of 125 teachers and students participated in this research. The
study applied the Need Assessment Approach (NAA) research model for the purpose of investigation/inquiry. A questionnaire was used to collect the data which was later analyzed using several descriptive techniques such as percentages, t-test, ANOVA, and chi-square test. The results of the study showed positive and significant associations.

The findings revealed that ICT—when used properly in education along with traditional instructor-led teaching and learning strategies—enhances effective knowledge delivery; improves access to knowledge; encourages effective critical thinking; enhances student academic achievement; produces richer learning outcomes; and thus, it can generally enhances both the quantity and quality of teaching and learning. The study also discovered a statistically positive correlation between prior experiences with ICT and students’ attitudes and anxiety toward ICT use (Ololube et al., 2009).

Another similar study was conducted by Chandra and Lloyd (2008) at a co-educational state secondary school in Queensland, Australia investigating the impact of ICT use on students’ achievement in science class over a two-year period. Participants were divided into two cohort groups. Both cohort 1 and cohort 2 undertook the same semester program in terms of subject content. However, the delivery method for instruction was changed over the time. In the first year, students were all enrolled in a chemistry class and instructions were provided in a traditional manner. Whereas, in the second year, students in cohort 1 group (i.e., traditional group) were enrolled in a physics class with instructions being delivered using a traditional learning environment, while students in cohort 2 group (i.e., blended group) were enrolled in the same physics class, but instructions were delivered using a blended learning and teaching environment utilizing ICT with traditional instructions. The two groups were of comparable size and gender balance, as well as they evidenced a similar mix of ethnic backgrounds. The tests that were used for measuring students’ performance were developed locally within the school.

Both quantitative and qualitative methods of analysis were deployed. Comparisons between the cohorts and the pedagogical approaches were made. Paired sample t-tests were used to compare the means from the tests. Research findings derived from both the quantitative and qualitative analyses pronounced clearly that ICT, through an e-learning intervention along with traditional pedagogical approaches, did have a statistically significant positive impact on students’ achievement, in terms of improvement in test scores, as well as heightening students’ engagement for the majority of students in the blended group. However, this improvement in performance was not equal or global among all students. The results showed that the effect of ICT was evidenced differently within each group as well as between and across different groups. Some participants showed reduced numerical outcomes despite a reported enjoyment of the altered learning environment. The authors did not consider this outcome as a surprising one, since it coincides with educators’ and researchers’ beliefs, which were documented and recorded over the past decades in a myriad of studies, that different teachers use different technologies as well as different teaching and learning methodologies and strategies to achieve different outcomes measured in different ways (Chandra & Lloyd, 2008).

A different research study conducted by Harrison, Lunzer, Tymms, Fitz-Gibbon, and Restorick (2004) in the United Kingdom (UK) on a national level to investigate the correlation between student performance on national tests and ICT usage. The research focused on a blended pedagogical strategy of teaching and learning. This longitudinal study
was funded by the UK Department for Education and Skills (DfES) and measured students’ relative gains in academic performance over a two-year period. A total of 60 schools participated in the investigation, 27 were primary, 28 were secondary, and five were special schools. The selected schools ensured good demographic representation.

A sample of 20 students was selected by a teacher research coordinator within each school in order to be representative of the relevant year-group as a whole. Data collected only from 55 schools (i.e., primary and secondary) were used in the statistical analysis. Predictor scores for the participants were obtained from the results of their public examinations (i.e., UK governmental national tests) for Key Stage 2 (KS2), Key Stage 3 (KS3), and the General Certificate of Secondary Education (GCSE) test for Key Stage 4 (KS4) prior to the experimental year. Participants’ relative gain scores were obtained from their scores in the governmental national tests during the two-year period of the study and constituted the principal measure of academic progress used in this research.

The final analysis was based mainly on students’ performance in those tests (i.e., prior and after the study) as well as their responses to the survey questionnaires which they had completed during the first year of the project and the final year as well. Comparisons between and across the groups were made using simple Analysis of Variance (ANOVA). Three levels of analysis were conducted on the collected data: (1) student-level analysis; (2) school-level analysis; and (3) multilevel analysis.

The results of the study constituted very strong evidence that curriculum-centered ICT usage along with traditional face-to-face pedagogical methods do have a measurable effect on student’s performance and attitudes. The existence of significant and linear advantage association between ICT usage and student’s achievement was clearly recorded throughout the analyses and across disciplines (e.g., in English, mathematics, science, modern foreign language, geography, history, and design technology) and grade levels (Harrison et al., 2004).

Thus, a wide range of scholarly research studies conducted over the past 15 years or more attest the close linkages among scholastic success, ICT use, curricula’s content, and blended learning and teaching methodology—with students doing better in national standardized tests, becoming more fascinated and involved in their own studies, and even having more fun learning. ICT tools and the content they carry along with blended methods of teaching and learning have the potential to create a solid foundation for promoting learner/student-centered environments as well as life-long learning across all disciplines and grade levels.

**Methodology**

**Research Design**

A quasi-experimental research model was deployed to evaluate and identify the impact and usefulness of a blended pedagogical methodology of teaching and learning on students’ education, motivation, and attitudes. This research design unveils a role model blended learning and teaching environment—where ICT tools are utilized and integrated into teaching and learning offline and online alike—and explores how such pedagogical methodology can be implemented efficiently and effectively. This design provides a pragmatic and thorough descriptive analysis close to the participants’ experience. Therefore, it helps elucidating the effect of blended learning and teaching strategies on students’ learning, motivation, and attitudes with greater clarity and understanding.

**Sample**

A sample of 128 female undergraduate students from the College of Education at
KU enrolled in six sections of an undergraduate-level course entitled “Computing in Education 0840-235” for the Fall and Spring semesters 2010-2011 participated in this research study. The study involved the application of a blended model of teaching and learning in only three sections (i.e., experimental group). Whereas, another three sections (i.e., control group) of the same course were taught in a traditional manner. Other extents of exploitations were not included. The selected sections included students from a variety of majors. The two groups were of comparable size (i.e., 64 students in the experimental group and 64 students in the control group) and gender balance, as well as they evinced a similar mix of academic and ethnic backgrounds. All participants were senior students. This academic course is a three-credit compulsory requirement for the professional preparation of all undergraduate students in the College of Education.

Data Collection

The study’s data was collected over a nine-month period. The academic course taught the same subject content by the same instructor using different delivery methods for instruction—a blended pedagogical approach of teaching and learning versus a traditional face-to-face instructor-led approach. The data was collected in two phases. The first phase started in the Fall semester 2010-2011 where the researchers used a traditional face-to-face instructor-led approach of teaching and learning with the control group. However, in the second phase, which started in the Spring semester 2010-2011, the researchers exploited a blended learning and teaching environment model, with the experimental group, wherein ICT tools are effectively and efficiently utilized and integrated into teaching and learning along with traditional face-to-face instruction.

This instructional role model combines: (1) face-to-face instruction/training (i.e., traditional teaching/learning environment); (2) online instruction/training over the Web (i.e., online teaching/learning environment) using a learning management system and an online training system; (3) computer-based instruction/training using educational software; (4) Internet/computer-based testing; (5) Internet/computer-based standardized testing; (6) traditional testing; and (7) traditional curriculum/materials such as textbooks, training manuals, and lectures’ notes. In this model, the instructor role shifted from being merely a lecturer to a facilitator, a director, a monitor, and a mentor who: (1) provides resources and facilities; (2) directs teaching and learning; (3) monitors students’ learning progress; (4) inspires students to get involved in creating their own learning experiences; and (5) identifies instructional and students’ needs.

Moreover, in this facilitative learning/teaching blended environment, the researchers incorporated Berge’s (1995) four instructor roles for moderating online discussions. Berge’s model can be utilized to assist instructors/facilitators to perform and execute multiple roles in online teaching/learning environments as well as traditional ones. These roles include: pedagogical, social, managerial, and technical. This model has the ability to: (1) enhance the involvement of students in building their own learning; (2) augment the involvement of students with the course being taught; (3) accelerate students’ persistence and success; and (4) promote lifelong learning/teaching environments for students of all ages and across disciplines.

In addition, several means of inquiry, both quantitative and qualitative, were utilized for data collection purposes in order to ensure quality analysis and to obtain in-depth understanding of this new blended strategy. These measurement tools include: (1) interviews; (2) observations; (3) traditional tests; (4) Internet/computer-based assessments using online learning/training systems as well
The collected data was interpreted on the basis of objectives formulated. Each research question is presented, analyzed, and discussed separately and consecutively. The findings are displayed in tables. Each table is labeled to indicate the type of data being scrutinized.

**Data Analysis**

**Research Question No. 1 – Students’ Learning and Academic Achievement**

This question tackles whether or not the new approach does affect students’ learning and academic achievement? In order to answer this question, information about students’ performance in the class was collected and used as an indicator for academic achievement (i.e., project quality and final grade). The dependent variable “project quality” was classified into three categories (i.e., high, medium, and low quality). The factor variable “final grade” was classified into four categories (i.e., A, B, C, and D & F).

The first chi-square test for differences was performed to examine the differences between the control and experimental group with regard to the “project quality” dependent variable. The difference between the two groups was significant, $\chi^2(2, N = 128) = 23.40, p < 0.05$, favoring the experimental group. Analysis of the standardized residuals showed that the experimental group students were more likely to submit high quality projects than control group students (i.e., Std. Residual = 2.4).

The second chi-square test for differences was conducted to scrutinize the differences between the control and experimental group with regard to the “final grade” dependent variable. The difference between the two groups was significant, $\chi^2(3, N=128) = 20.67, p < 0.05$, favoring the experimental group too. Analysis of the standardized residuals indicated that the control group students were more likely to get “D’s and F’s” than experimental group students (i.e., Std. Residual = 2.3).
Research Question No. 2 – Students’ Motivation and Attitudes

This question tackles whether or not the new method does impact students’ motivation and attitudes toward teaching and learning? In order to answer this question, information about students’ behavior during the course was collected and used as an indicator for motivation and attitudes (i.e., number of online training courses attended, number of ICDL tests taken, and number of absence days). The dependent variable “number of online training courses attended” was classified into three categories (i.e., two or less, three to five, and six or more). The factor variable “number of ICDL tests taken” was classified into four categories (i.e., none, two or less, three to five, and six or more). The dependent variable “number of absence days” was classified into three categories (i.e., none, two or less, and three or more).

The first chi-square test for differences was performed to examine the differences between the control and experimental group with regard to the “number of online training courses attended” dependent variable. The difference between the two groups was significant, $\chi^2(2, N = 128) = 27.36, p < 0.05$, favoring the experimental group. Analysis of the standardized residuals showed that the experimental group students were more likely to attend six or more online training courses (i.e., Std. Residual = 2.8). Whereas, the control group students were more likely to attend two or less online training courses (i.e., Std. Residual = 2.3).
The second chi-square test for differences was conducted to scrutinize the differences between the control and experimental group with regard to the “number of ICDL tests taken” dependent variable. The difference between the two groups was significant, \( \chi^2(3, N = 128) = 21.32, p < 0.05 \), favoring the experimental group too. Analysis of the standardized residuals indicated that the experimental group students were more likely to take six or more ICDL tests (i.e., Std. Residual = 2.2). However, the control group students were more likely not to take any test (i.e., Std. Residual = 2.3).

The third chi-square test for differences was performed to scan the differences between the control and experimental group with regard to the “number of absence days” dependent variable. The difference between the two groups was significant, \( \chi^2(2, N = 128) = 38.15, p < 0.05 \), favoring the experimental group as well. Analysis of the standardized residuals revealed that the majority of the experimental group students were more likely to attend all classes (i.e., zero absence rate) (i.e., Std. Residual = 2.9). While, the control group students were more likely to be absent more than two days (i.e., Std. Residual = 2.8).

**Discussion**

This quasi-experimental research study presents empirical evidences on the impact and usefulness of a blended pedagogical methodology of teaching and learning on students’ education, motivation, and attitudes. The findings are consistent with the literature reviews provided in this paper as well as the assumptions postulated. The experimental group participants outscored their counterparts in the control group on their academic performance.

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of Online Training Courses Attended</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( \leq 2 )</td>
<td>( 3-5 )</td>
</tr>
<tr>
<td>Control</td>
<td>51</td>
<td>8</td>
</tr>
<tr>
<td>%</td>
<td>79.7</td>
<td>12.5</td>
</tr>
<tr>
<td>Experimental</td>
<td>23</td>
<td>14</td>
</tr>
<tr>
<td>%</td>
<td>35.9</td>
<td>21.9</td>
</tr>
<tr>
<td>Total</td>
<td>74</td>
<td>22</td>
</tr>
<tr>
<td>%</td>
<td>57.8</td>
<td>17.2</td>
</tr>
</tbody>
</table>

**Table 2.1** Frequencies and percentages of the control and experimental group participants with regard to the dependent variable “number of online training courses attended”

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of ICDL Tests Taken</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>None</td>
<td>( \leq 2 )</td>
</tr>
<tr>
<td>Control</td>
<td>39</td>
<td>12</td>
</tr>
<tr>
<td>%</td>
<td>60.9</td>
<td>18.8</td>
</tr>
<tr>
<td>Experimental</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>%</td>
<td>23.4</td>
<td>23.4</td>
</tr>
<tr>
<td>Total</td>
<td>54</td>
<td>27</td>
</tr>
<tr>
<td>%</td>
<td>42.2</td>
<td>21.1</td>
</tr>
</tbody>
</table>

**Table 2.2** Frequencies and percentages of the control and experimental group participants with regard to the dependent variable “number of ICDL tests taken”
achievement, motivation, and attitudes. The chi-square tests showed that the students in the experimental group differ significantly than the students in the control group. The results reveal that there are significant differences between the two groups with respect to “project quality”, “final grade”, “number of online training courses attended”, “number of ICDL tests taken”, and “number of absence days”; favoring the experimental group. The students enrolled in the experimental group submitted projects with better quality; earned higher final grades; attended more online training courses; took more ICDL tests; and the majority attended all classes (i.e., had zero absence rate). These findings are consistent with many studies conducted over the past decade. Additional empirical research studies are anticipated to be conducted on a wide scope covering different disciplines, grade levels, and geographical locations. These studies would be implemented utilizing additional data collection tools and strategies in order to address the limitation of this current research study, which focused on a small sample of participants.

**Conclusions and Recommendations**

The use of a blended pedagogical approach of teaching and learning underlying the theoretical perspectives of “constructivism” philosophy across all disciplines, grade levels, socio-economic aspects, and geographical locations has been shown to be effective in education. Research studies over the past decades have presented clear evidences on the significant impact of such strategy or approach on students education with regard to academic achievement, motivation, and attitudes toward teaching and learning alike (Delialioğlu, 2012; Al-Saai, Al-Kaabi, & Al-Muftah, 2011; Ahmad, Shafie, & Janier, 2008; Pereira, Pleguezuelos, Merí, Molina-Ros, Molina-Tomás, & Masdeu, 2007; Garrison & Kanuka, 2004).

The results of this study are cohesive/consistent with the literature presented in this paper. The students enrolled in the experimental group were significantly outscoring their counter peers in the control group. They submitted projects with better quality; earned higher final grades; attended more online training courses; took more ICDL tests; and the majority attended all classes. These findings imply that the potential of a blended approach of teaching and learning is endless. It can produce robust teaching and learning environments and experiences. It can also reveal that teaching and learning with such method or strategy, while integrating and incorporating ICT tools, can be fun.

Some recommendations that can serve as a plan—for Kuwait University, the Ministry of Education, and the Ministry of Higher Education—to consider are listed below:

| Table 2.3 | Frequencies and percentages of the control and experimental group participants with regard to the dependent variable “number of absence days” |
|---|---|---|
| Number of Absence Days | Control | Experimental | Total |
| | N | % | N | % | N | % |
| None | 17 | 26.6 | 51 | 79.7 | 68 | 53.1 |
| ≤ 2 | 24 | 37.5 | 10 | 15.6 | 34 | 26.6 |
| ≥ 3 | 23 | 35.9 | 3 | 4.7 | 26 | 20.3 |
| Total | 64 | 100.0 | 64 | 100.0 | 128 | 100.0 |
1. Encouraging the teaching staff to utilize a blended approach of teaching and learning that emphasizes on the theoretical perspectives of the “constructivism” philosophy;

2. Providing training sessions to the teaching staff on how effectively and efficiently a blended approach of teaching and learning can be incorporated and integrated within our educational environments;

3. Facilitating the teaching staff with training sessions on how to efficiently and effectively incorporate and integrate ICT tools within the curricula in a blended teaching and learning environment and becoming competent in all four of Berge’s online roles;

4. Developing additional assessment strategies and measures, in order to make the evaluation methods in the blended teaching and learning environment more effective, efficient, and objective;

5. An advisory committee consisting of teaching and learning specialists, distance learning administrators, instructional technologists, instructional designers, subject matter specialists, evaluation and measurement specialists, experienced traditional and/or online instructors, proficient traditional and/or online learners, and professionals in the field of e-learning should be formed; and

6. Additional empirical research studies on a wide range covering different disciplines, grade levels, socio-economic aspects, and geographical locations are needed to be conducted—in the State of Kuwait and the Arab Gulf Cooperation Council as well as the Middle East region—in order to generate solid measures of the blended teaching and learning approach effectiveness and efficiencies on students’ academic achievement, motivation, and attitudes.

References


