ICT education in library and information science programs
An analysis of the perceptions of undergraduate students

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Abstract
Purpose – The purpose of this paper is to explore students’ perceptions and views of the instructors, in relation to information and communications technology (ICT) education in library and information science (LIS) programs.

Design/methodology/approach – A questionnaire survey was carried out among students from the two LIS departments in Kuwait. A focus group was conducted with faculty members of the two institutions, who provided qualitative input about the instruction of ICT, needed changes, and relevance of market needs.

Findings – Participants showed dissatisfaction with the currently available ICT courses in the LIS programs. Students pointed out deficiencies and inadequacies in ICT resources and facilities, and suggested upgrading software and hardware. They appeared to be satisfied with the ICT skills being targeted by LIS programs. They also appeared to be satisfied with the ICT instructors. The study pointed out a need for collaboration with professional forums for continuing education programs and the need for revisions in curricula to introduce more focused courses that meet the needs of the ever-changing market requirements and give the students access to professional bilingual materials. The faculty members noted the demands of the job market and proposed measures for addressing them through enhanced course content and improved opportunities for hands-on instruction.

Originality/value – Earlier studies reported in the literature have discussed ICT education in broader terms. This study reports the situation of ICT education in LIS programs in Kuwait, focusing on specific areas such as resource, curricula, and instructors.

Keywords Kuwait, Information technology, Information studies, Undergraduates, Library studies, Library and information science, ICT competencies, ICT courses, Information studies education

Paper type Research paper

Introduction
Information and communications technology (ICT) skills have become extremely important as we witness an intensive use of automated systems and tools in learning and teaching activities. As a result, the ICT component has become critical in the library and information science (LIS) education programs. ICT skills for information professionals are also considered vital as these skills give them an advantage in the competitive job market. Various studies have heightened the awareness that ICT skills have become central in the LIS education. Rehman (2000) reported that a number of new ICT courses had been introduced in the LIS programs. In a follow-up study, Rehman (2008) noted that the LIS programs have become inter-disciplinary to extend coverage to different areas including ICT-related courses. Importance and role of ICT have also been pointed out by other studies.
Several other studies have also discussed the need, scope, and strategies for ICT courses in the LIS programs. Marouf and Rehman (2007) studied the ICT competencies among LIS students at Kuwait University (KU). They identified four competency areas that included ICT skills as a main component. They found that lack of ICT competencies was considered to be the most frequently mentioned concern in career opportunities and suggested expanded treatment of the ICT component in LIS education programs.

An analysis of the job market in Kuwait (Rehman, 2008) indicated that employers were dissatisfied with LIS graduates due to their week ICT skills. It was stressed that curricula needed to be conceived in relation to the market needs and employer perceptions. In one of the recent studies in Kuwait, Buarki et al. (2009) examined the coverage of the ICT skills in the LIS curricula in the Kuwaiti higher education sector. This study corroborated the observations of earlier studies and reported that ICT skills of LIS students did not satisfy the needs of the job market. This study also highlighted that the curriculum was outdated and traditional methods were being used for teaching ICT-related courses. Fortney (2009) also reported a mismatch of ICT curricula with the demands of the job market. He recommended that the ICT education for LIS requires the participation of professional associations, employers, teachers, schools, and students. Chu (2006) reported that transformation in information studies curriculum does not come only from technology but also originate from the cultural and social dimensions. Gerolimos (2009) states that different overestimation of the role of information technology (IT) is also not helpful. He suggests that the core value of librarianship should not be ignored while emphasizing on the strengthening of ICT component.

Problem statement
The aforementioned review has indicated the necessity of strengthening the ICT component in the information studies education programs in higher education. The job market also appears to have a great demand for professionals equipped with ICT competencies. Various research studies have pointed out inadequacies of coverage of the ICT component and the lack of ICT skills among information professionals. It is important to investigate how students rate their ICT education and how they perceive the effectiveness of ICT resources and facilities, course assignments and reading materials, and the quality of instructors. This study was designed to examine student views about the adequacy of ICT resources and facilities and the quality of teaching. The study also attempted to investigate whether there were differences in opinions about the adequacy of ICT resources and the quality of the education among the students studying in two different academic institutions. It is expected that a clear understanding about these aspects would help in articulating the needs of students for ICT education and training.

Research questions
This study was aimed at investigating the perceptions of undergraduate students about the ICT component in LIS programs in Kuwait with an emphasis on the following research questions:

**RQ1.** What are students’ opinions about the availability of ICT resources and facilities in the respective academic institutions?
RQ2. How satisfied are the students with ICT-related courses offered in their programs?

RQ3. How do the students perceive the competence and preparedness of the instructors who teach the ICT courses?

RQ4. What are students’ perceptions about the assignments and reading materials related to theoretical and practical aspects in the ICT courses?

RQ5. Are there significant differences in students’ perceptions in the two academic institutions in Kuwait?

RQ6. What are the views of instructors about the content of ICT component and the changes needed in contents and instructional strategies?

Research context
This study was conducted at two major educational institutions engaged in LIS education in Kuwait. These include the Public Authority for Applied Education and Training (PAAET) and KU.

The Department of LIS in PAAET was established in 1977 as the first program in the LIS field in Kuwait. It started as a two-year diploma with 65 students in the Institute of Teachers Education (ITE). ITE was later changed to the College of Basic Education. In 1987, the program was upgraded from a two-year diploma to the Bachelor in Library and Educational Technology. In 1998, the degree nomenclature was changed to LIS. The current enrollment in this program is more than 800. The program requires 130 credit hours with 60 credits focused on the major including 12 credits for elective ICT.

The LIS program in KU was established in 1996 as a Master’s degree program, in the College of Graduate Studies. This program was placed in the College of Social Sciences in 2001 and the program was upgraded as the Department of LIS. In 2005, a minor in information studies was also introduced in the College of Social Sciences. Average annual enrollment in these programs is 30-60, respectively. The minor has 24 credit hours, of which six credit hours are assigned to compulsory courses and 18 to elective courses, which includes ICT courses.

Both PAAET and KU offer a number of ICT-related courses as part of their LIS curriculum. These courses are expected to be in line with the needed competencies of the job market. These courses are also expected to achieve the learning outcome stated in the curriculum. The courses that are offered by the two institutions are as follows.

KU:
- LIS 213 Basics of IT.
- LIS 331 Databases Design and Information Retrieval.
- LIS 332 Internet Applications.
- LIS 333 Electronic Publishing.
- LIS 334 Web Design.
- LIS 432 Digital Libraries.
- LIS 432 Multimedia Systems.
PAAET:

- LIS 441 Electronic Information Organization.
- LIS 442 Management of Databases Systems.
- LIS 443 Communication Systems in Library and Information Services.
- LIS 444 Information Storage and Retrieval Systems.
- LIS 446 Software Evaluation.
- LIS 447 Electronic Information Sources.
- LIS 213 Modern and Electronic Publishing.
- LIS 350 Information Marketing.

Related studies

Studies have been conducted in different parts of the world about the ICT component in LIS programs. Buarki et al. (2009) analyzed the views of LIS students in the higher education sector of Kuwait. Based on the input received through semi-structured interviews of students, this study found that LIS students lacked ICT skills. The study further found that curriculum was outdated and teaching methods used were traditional. The level of ICT skills of LIS professionals was not found to be satisfactory for the job market. It was recommended the ICT education be improved by collaborating with prospective employers to identify what types of skills are actually needed and with also using the standards developed by professional associations.

In a recent study conducted in the USA, Hanson-Baldauf and Hassell (2009) investigated if students enrolled in school library and media certification programs were adequately prepared for the task of integrating technology and skills into instruction. The study explored the perceived competences of students and their use of ICT. The participants between the ages of 18 and 25 reported the highest level of competence in communication and collaboration technologies; file sharing; and networking technologies. Highly ranked tools included e-mail, presentation tools, threaded discussion forums and digital cameras. The level of awareness and use approximated the frequency with which the students were exposed through their coursework. The respondents reported that while technologies such as wikis, blogs, and podcasts were discussed, the students did not have sufficient opportunity for hands-on experience. They felt that they were not adequately prepared to use emergent Web 2.0 technologies.

Ebrahimi (2009) discussed the effect of ICT on teaching LIS in Iran and observed that there was a need to incorporate more ICT modules and enhance the instructional methods in ICT courses. It was reported that LIS curriculum in Iran considers three approaches for coverage of ICT: introductory units and workshops; units focusing on the use of ICT as means of information storage and retrieval; and ICT as a channel for delivering instruction. It was suggested that a continuous review of curriculum for integrating ICT into LIS was needed. He argued that the instructors need to upgrade their skills for more effective teaching.

Kamila (2008) investigated the impact of ICT toward change of LIS curricula in India. Based on review of the analysis of curricula in the LIS programs, this study reported that the ICT competencies covered included telecommunication, networking, library automation, and internet applications. Inadequate technological infrastructure was considered a major constraint to support the integration of ICTs in the curricula.
While internet access was found widely available, many LIS schools seemed to have difficulties in terms of low bandwidth and network configuration. This study also found gaps between job market and LIS curriculum and reported lack of ICT skills among instructors and support staff. The study has highlighted that the LIS programs are incorporating ICT modules in their curriculum, but complete diffusion of ICT into the LIS programs has not been achieved.

In the sub-Saharan Africa, Minishi-Majanja (2007) reviewed the efforts of LIS programs for integration of ICT into LIS curricula. It was reported that most schools incorporated new modules to cover ICT in LIS courses. Curriculum developments showed considerable strides in infusing ICT competencies, but teaching appeared to remain theoretical as schools lacked adequate resources for extended practical training. The study reported that a great diversity existed in individual countries in terms of coverage and treatment corresponding to the availability of relevant facilities in respective countries. ICT modules generally covered different application software, intranet, and internet, but the coverage is not uniform across countries and schools. Most ICT modules are offered as core and/or required within the LIS programs. Some aspects of ICT are integrated in other modules.

Kavulya (2007) identified priority areas of training for ICT skills required by LIS professionals in relation to the current job market of Kenya. Data were collected from various stakeholders including students, teachers, and professionals. Topics considered important by more than 50 percent of the respondents included hardware and software; database construction; web site development; digitization process; and internet use. It was pointed out that the training did not sufficiently address the market needs. Lack of adequate ICT content in the courses was considered a major barrier. It was recommended that modules on modern ICT should be added to LIS curricula and that resources and facilities should be improved to support ICT teaching.

Ocholla (2003) studied the status of ICT in LIS departments in selected Eastern and Southern African countries in relation to learning, teaching, research, academic administration, and resources support. He sought opinions of the heads of departments and program directors. The study found that while there was overwhelming interest in learning and using ICT, development of competencies was constrained due to several factors. These included lack of proper ICT infrastructure and lack of strong technological capabilities among LIS teachers. South Africa was the only exception where the level of ICT skills was found satisfactory.

Rehman and Al-Awadhi (2011) conducted pre- and post-tests of the undergraduate students of KU and found that the course was significantly associated with differences of ICT skills of the students. They noted that ICT content needed to be further strengthened in the course by having intensive hands-on treatment. They viewed that the students who had taken information studies undergraduate courses they expected to be equipped with adequate ICT competencies needed for gainful employment in the Kuwait job market.

Review of relevant studies has indicated that inadequacies existed in developing ICT skills among students in LIS programs. Most studies reviewed used surveys and reported the results in a general manner. There was only one study that addressed the topic in specific terms. This study addresses the issues related to ICT instruction in more specific terms.
Procedures

Data collection

The study was conducted in two phases: phase 1 was a survey of students and phase 2 was a focus group discussion with instructors.

The survey method was employed, using a questionnaire for this study. The population of the study consisted of the students from the Department of LIS at PAAET and the students from the minor in information studies at KU. The questionnaire was administered on four classes, two classes from each of the two academic institutions (KU and PAAET). Cluster sampling was employed by listing all the courses offered in the particular semester. The four classes were selected randomly. Consent of the instructors was obtained before distributing the questionnaires. Questionnaires were distributed to the students in each class in person and collected in the next class. In total, questionnaires were distributed to 120 students, out of which 93 responses were collected (77.5 percent). The construction of the questionnaire entailed a review of the related studies and an input from the colleagues from each of the LIS Departments in KU and PAAET.

The questionnaire was pilot-tested using three students who were not included in the actual survey. The questionnaire had the following six sections:

(1) Personal information. Academic institution, area of specialization, number of credits completed, gender, GPA, etc.

(2) ICT resources and facilities. Students were asked to rate their extent of satisfaction with ICT resources and facilities.

(3) ICT skills. Students were asked to rate their skills using a list of 13 ICT skills.

(4) Reading materials and assignments. Students were asked to indicate their perceptions about the value against a list of five statements.

(5) Instructors. Students were asked to provide input about their satisfaction with the instructors who were teaching ICT courses.

(6) Suggestions for improvements. Input was also sought from students on their suggestions for enhancing ICT resources and IT courses.

Focus group discussions

It was considered appropriate to conduct a follow-up study by holding focus group discussion with the instructors engaged in ICT and information studies teaching from KU and PAAET. The focus group consisted of seven faculty members and the discussion was coordinated by the researchers. Focus group meeting lasted for about two hours. The discussion was guided by leading questions in the following four areas:

(1) ICT competence level of students before they take information studies courses.

(2) ICT competencies needed to address the needs of the job market in Kuwait.

(3) Existing course contents and needed changes to strengthen the ICT component.

(4) Strategies to enhance the practical orientation and hands in ICT modules in information studies courses.

The researcher took notes of the focus group discussion and the consensus emerged among the participants on the above-mentioned topics. Elaborate deliberations of the group discussion provided qualitative data for the study that helped in explaining...
the results of the earlier survey. Suggestions from the focus group participants have been incorporated relevant sections of analysis and discussion.

Data analysis
Descriptive statistics including mean scores and standard deviations were used for tabulations of results. The t-test was used for comparing the mean of the two groups from KU and PAAET. The t-value was used in defining the statistical significance of the variance between these two groups. Student responses about perceptions about ICT resources and facilities were analyzed to examine if there were any differences with regard to their affiliation. It was also applied to analyze the significant differences between students from KU and PAAET on their satisfaction with their ICT reading materials and assignments, and ICT courses’ teachers. The statements under each category of these variables were converted into an overall measure for analysis. For this purpose t-test analysis was applied for different parameters.

Qualitative data, gathered from the focus group discussion, were analyzed to form recommendations for proposing improvements in course contents and instructional approaches.

Findings
Participants
Of the 93 respondents, 41 percent were from KU and 59 percent from PAAET. From PAAET, the majority (59 percent) was majoring in LIS at PAAET. The students from KU were doing their minor in information studies. Students who participated in the study were well exposed to relevant curriculum as the majority had completed more than 90 credit hours (62 percent) in their respective programs when the study was carried out. Therefore, they were considered to be in a position to give useful input about the ICT courses and related aspects in their respective programs. It is noted that a total of 62 per cent of the respondents have a GPA range in grade B. The majority of the respondents (63.4 percent) were female.

ICT resources and facilities
The participants were asked to mark the extent of their satisfaction with ICT resources and facilities on a scale of 1-5 (1 for strongly disagree and 5 for strongly agree). The mean score was calculated to indicate the respondents’ perceptions. The mean scores are listed in Table I.

A majority of respondents from KU (4.39) and PAAET (4.36) perceived that the hardware and software in their labs needed upgrading, enhancements, and/or replacements. They, however, felt that the number of computers was adequate. The students rated the availability of software favorably as the mean score for software such as MS Office, and services such as databases and internet was higher than three.

The respondents from PAAET (3.45) indicated that they were satisfied with the ICT technical support provided. Participants from KU rated the support at only 2.34 indicating their dissatisfaction with the ICT technical support services. A mean below three for other items also indicated their agreement with the inadequacy of ICT resources and facilities.

Data about perceptions were further analyzed to investigate the differences in the two academic institutions.
Table II presents findings about the mean score, standard deviation, the $t$-test result value, and the level of significance. Criterion used in this study was 0.05.

The analysis showed significant differences regarding the technical ICT support, $t = 2.069, p = 0.000$, access to databases ($t = 2.069, p = 0.045$) and computer numbers ($t = 2.455, p = 0.015$). LIS students from PAAET rated the available technical support more favorably ($M = 3.53, SD = 1.05$) than KU students ($M = 2.34, SD = 1.021$). This result was expected as the PAAET departmental labs are maintained and supervised by TA’s with good technical background. Also, since these labs are located within the department building, availability of technical support was perceived to be better. The labs in the College of Social Sciences at KU are run as a central facility open to all students in the college. Data presented in Table III indicate that there is a significant difference between KU and PAAET students’ perceptions about the availability of ICT facilities and resources.

The statistical tests indicate that there is no significant difference between students from KU and PAAET in their perceptions for the overall available resources and facilities as far as institutional affiliation is concerned. On the other hand, the data analysis also showed significant differences in student perceptions about the access to databases and other services from their labs ($t = 2.069, p = 0.045$). It seems that KU students have better access ($M = 3.53, SD = 1.133$) than PAAET students.

<table>
<thead>
<tr>
<th>Resources and facilities</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware and software</td>
<td>4.38</td>
<td>0.859</td>
</tr>
<tr>
<td>MS Office</td>
<td>3.63</td>
<td>1.081</td>
</tr>
<tr>
<td>Internet</td>
<td>3.37</td>
<td>1.223</td>
</tr>
<tr>
<td>Databases</td>
<td>3.25</td>
<td>1.100</td>
</tr>
<tr>
<td>ICT support</td>
<td>2.94</td>
<td>1.150</td>
</tr>
<tr>
<td>E-learning</td>
<td>2.72</td>
<td>1.136</td>
</tr>
<tr>
<td>Labs layout</td>
<td>2.45</td>
<td>1.175</td>
</tr>
<tr>
<td>Labs working hours</td>
<td>2.19</td>
<td>1.173</td>
</tr>
<tr>
<td>Computers</td>
<td>2.08</td>
<td>0.958</td>
</tr>
</tbody>
</table>

Table I.
Rank of ICT resources and facilities

<table>
<thead>
<tr>
<th>ICT resources</th>
<th>KU ($n = 38$)</th>
<th>PAAET ($n = 55$)</th>
<th>t-value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware and software</td>
<td>4.39</td>
<td>0.679</td>
<td>4.36</td>
<td>0.969</td>
</tr>
<tr>
<td>MS Office</td>
<td>3.55</td>
<td>1.032</td>
<td>3.69</td>
<td>1.120</td>
</tr>
<tr>
<td>Internet</td>
<td>3.24</td>
<td>1.283</td>
<td>3.45</td>
<td>1.184</td>
</tr>
<tr>
<td>Databases</td>
<td>3.53</td>
<td>1.133</td>
<td>3.05</td>
<td>1.044</td>
</tr>
<tr>
<td>ICT support</td>
<td>2.34</td>
<td>1.021</td>
<td>3.35</td>
<td>1.058</td>
</tr>
<tr>
<td>E-learning</td>
<td>2.76</td>
<td>1.261</td>
<td>2.69</td>
<td>1.052</td>
</tr>
<tr>
<td>Labs layout</td>
<td>2.37</td>
<td>1.282</td>
<td>2.51</td>
<td>1.103</td>
</tr>
<tr>
<td>Labs working hours</td>
<td>2.00</td>
<td>1.230</td>
<td>2.33</td>
<td>1.123</td>
</tr>
<tr>
<td>Computers</td>
<td>1.79</td>
<td>0.905</td>
<td>2.27</td>
<td>0.952</td>
</tr>
<tr>
<td>Overall resources and facilities</td>
<td>2.88</td>
<td>0.535</td>
<td>3.07</td>
<td>0.551</td>
</tr>
</tbody>
</table>

Note: *$p < 0.05$
(M = 3.05, SD = 1.044). Another significant difference was found in their perceptions for the adequacy of computer numbers (t = 2.455, p = 0.015). Students from PAET are more satisfied as far as the computer numbers are concerned (M = 2.27, p = 0.925) than students from KU (M = 1.79, p = 0.905).

As shown in Table II, students from KU perceived that they had better hardware and software setup, access to databases and e-learning facilities than PAET students, while students from PAET perceived more positively about the adequacy of computer numbers. Overall, PAET students were more positive to their resources and facilities than KU students.

**ICT skills**
The participants were asked to mark their perceptions about ICT skills they had acquired from the ICT courses offered in their academic institutions. Their responses indicated that the skills for information searching and the exposure to internet applications ranked first with a mean of more than four for both groups of students from KU and PAET. Table III shows the results about these skills. The skills of using MS Office applications and computer operating systems have a mean of higher than four for KU students as compared to PAET students in Table IV.

As shown in Table III, the responses from both the institutions yielded a mean of more than three for most of the ICT skills. This demonstrates that they are satisfied with the learning outcome of the ICT courses. The troubleshooting skills were the only items, which received a mean of less than two from the KU students and less than three from PAET students.

Table IV presents findings about the mean scores, standard deviation for the two groups and t-test values and the level of significance for a comparison between the two. The t-test indicated that there were some differences between the students from KU and PAET in their perceptions about the ICT skills they acquired through ICT courses. The significant differences were in information literacy (t = 2.378, p = 0.012), use of different internet applications (t = 2.442, p = 0.009), use of MS Office applications (t = 2.825, p = 0.007), familiarity with operating systems (t = 2.078, p = 0.035), use of e-learning systems (t = 2.790, p = 0.005), databases designing (t = 3.146, p = 0.002), and troubleshooting (t = 2.790, p = 0.005).

<table>
<thead>
<tr>
<th>Skills</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information literacy</td>
<td>4.41</td>
<td>0.679</td>
</tr>
<tr>
<td>Internet applications</td>
<td>4.31</td>
<td>0.895</td>
</tr>
<tr>
<td>MS Office applications</td>
<td>4.06</td>
<td>0.972</td>
</tr>
<tr>
<td>Operating systems</td>
<td>3.99</td>
<td>0.922</td>
</tr>
<tr>
<td>Knowledge organization</td>
<td>3.73</td>
<td>1.028</td>
</tr>
<tr>
<td>Information processing</td>
<td>3.71</td>
<td>1.026</td>
</tr>
<tr>
<td>Searching databases</td>
<td>3.56</td>
<td>1.059</td>
</tr>
<tr>
<td>E-learning systems</td>
<td>3.47</td>
<td>0.983</td>
</tr>
<tr>
<td>Information needs</td>
<td>3.44</td>
<td>1.088</td>
</tr>
<tr>
<td>Networking applications</td>
<td>3.01</td>
<td>1.263</td>
</tr>
<tr>
<td>Databases designing</td>
<td>2.76</td>
<td>1.099</td>
</tr>
<tr>
<td>Troubleshooting</td>
<td>2.29</td>
<td></td>
</tr>
</tbody>
</table>

Table III. Overall perceptions about ICT courses skills
A significant finding was that the students in the minor in information studies from KU were more satisfied with their skills for information literacy (M = 4.61, SD = 0.495), internet application KU (M = 4.61, SD = 0.638), familiarity with operating systems (M = 4.24, SD = 0.852), use of e-learning systems (M = 3.74, SD = 0.950), and databases designing (M = 3.24, SD = 1.261). On the other hand, PAAET students were more satisfied with only their troubleshooting skills (M = 2.55, SD = 1.136) compared with KU students (M = 1.92, SD = 0.941). This result was supported by running again the t-test for the overall ICT skills variable, which shows a significant difference (t = 2.874, p = 0.003) between students from PAAET (M = 2.65, SD = 0.737) and KU (M = 2.25, SD = 0.557). The differences are shown in Table IV.

The table shows that KU students indicated that they were more positive about their overall ICT skills than PAAET students. KU students marked higher positive values to nine skills out of the 12 listed skills.

Reading materials and assignments
The participants were asked to indicate their perceptions about the extent of adequacy for reading materials and assignments. It was found that the majority of the participants from KU and PAAET indicated satisfaction with practical assignments and exams in ICT courses as the mean score ranged between 3.57 and 3.37. The relevant scores are given in Table V.

The practical exams component in ICT courses was rated higher than the theoretical part as indicated by mean score of 3.55 from KU students and 3.58 from PAAET students as indicated in Table VI. KU students were less satisfied with the content at 2.37 and more satisfied with the updated Arabic reading materials at 3.50 than PAAET at 3.27 in Table VI.

Results of the t-test are shown in Table VI. The significant differences were found in regard to the academic institutional affiliation for practical assignments and Arabic content materials. KU students were more satisfied with their practical assignments (M = 3.79, SD = 0.991), and less satisfied with Arabic content materials.
(M = 2.37, SD = 1.149) as compared with students from PAAET. The t-test for the overall reading materials and assignments satisfaction shows no significant difference between KU and PAAET students.

It was found that the overall satisfaction for the ICT courses’ materials and assignments was slightly higher for PAAET students as compared with KU students. However, KU students had a more significant positive rating for their ICT practical assignments, and were slightly higher for the updated Arabic materials.

ICT instructors
The respondents were asked to indicate their judgment for a number of statements about the instructors who teach ICT courses (Table VII). Mean scores for students from KU range from 4.44 to 4.05 for six out of eight statements. These statements were about the instructors’ helpfulness, use of teaching aids, interaction, and attitude toward discussions, lecture delivery skills, and technical ICT competencies. Other statements also received a high mean score between 3.94 and 3.97. These scores indicate the KU students are more satisfied in taking more ICT courses with their instructors and are more satisfied with the instructors’ availability during office hours.

For PAAET students, mean scores for all the statements range from 3.23 to 3.70. This result shows an average agreement with these statements.

It was found that the overall satisfaction of both the KU and PAAET students was significant. The results of t-test for statements showed that KU students were more satisfied with their teachers helpfulness (M = 4.45, SD = 0.860), technical competences (M = 4.05, SD = 0.985), availability (office hours) (M = 3.95, SD = 1.229), lecture delivery (M = 4.11, SD = 0.953), discussions (M = 3.31, SD = 0.998), and interaction (M = 4.11, SD = 1.134). The overall mean score for PAAET students’ assessment

<table>
<thead>
<tr>
<th>Items</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practical exams</td>
<td>3.57</td>
<td>1.136</td>
</tr>
<tr>
<td>Practical assignments</td>
<td>3.41</td>
<td>1.163</td>
</tr>
<tr>
<td>Hands-on module</td>
<td>3.37</td>
<td>1.091</td>
</tr>
<tr>
<td>Arabic materials content</td>
<td>2.98</td>
<td>1.151</td>
</tr>
<tr>
<td>Arabic materials updated</td>
<td>2.80</td>
<td>1.128</td>
</tr>
</tbody>
</table>

Table V. Overall perceptions about reading materials and assignments

<table>
<thead>
<tr>
<th>Items</th>
<th>KU (n = 38)</th>
<th>PAAET (n = 55)</th>
<th>t-value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Practical exams</td>
<td>3.55</td>
<td>1.179</td>
<td>3.58</td>
<td>1.117</td>
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<tr>
<td>Practical assignments</td>
<td>3.79</td>
<td>0.991</td>
<td>3.15</td>
<td>1.208</td>
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<tr>
<td>Hands-on module</td>
<td>2.79</td>
<td>1.189</td>
<td>3.11</td>
<td>1.117</td>
</tr>
<tr>
<td>Arabic materials content</td>
<td>2.37</td>
<td>1.149</td>
<td>3.09</td>
<td>1.023</td>
</tr>
<tr>
<td>Arabic materials updated</td>
<td>3.50</td>
<td>0.952</td>
<td>3.27</td>
<td>1.178</td>
</tr>
<tr>
<td>Overall reading materials and assignments</td>
<td>3.20</td>
<td>0.714</td>
<td>3.24</td>
<td>0.769</td>
</tr>
</tbody>
</table>

Table VI. Perceptions about assignments and reading materials

Note: *p < 0.05
of teachers was greater than 3.53; however, this reflects a lower level of assessment satisfaction for the ICT courses’ teachers than those at KU at 4.16.

The overall satisfaction of KU students with ICT teachers was more compared to PAAET students. All the related statements got higher mean scores of more than four from KU students with the exception of one, which was nearly four. Moreover, these results reveal that PAAET students are less satisfied with ICT instructors overall performance.

**ICT improvement**

The participants were asked to indicate their extent of agreement with a number of statements about possible improvements in ICT instruction and related matters. These scores are presented in Table VIII.

A majority of responses from KU and PAAET indicated agreement with all the statements. Mean scores for KU students ranged from 4.15 to 4.76 for five out of nine statements. The other four statements mean scores ranged from 3.13 to 3.84. Mean scores for PAAET students ranged from 4.10 to 4.69 for five of the statements and between 3.64 and 3.94 for the remaining statements. A mean score higher than three, which is the midpoint, indicates the importance of the need to keep upgrading the process of improvements.

**Focus group findings**

Discussion carried around the four questions listed in the data collection section resulted in the following salient points:

<table>
<thead>
<tr>
<th>Suggestions</th>
<th>M</th>
<th>SD</th>
<th>M</th>
<th>SD</th>
<th>t-value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computing facilities</td>
<td>4.70</td>
<td>0.567</td>
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<tr>
<td>Technical support</td>
<td>4.53</td>
<td>0.731</td>
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<tr>
<td>Software and applications</td>
<td>4.47</td>
<td>0.829</td>
<td></td>
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<tr>
<td>Internet</td>
<td>4.29</td>
<td>0.973</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reading materials</td>
<td>4.23</td>
<td>0.861</td>
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<td></td>
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<tr>
<td>Assessment and grading</td>
<td>3.90</td>
<td>1.054</td>
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<tr>
<td>Teaching staff</td>
<td>3.75</td>
<td>1.176</td>
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<td></td>
<td></td>
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<tr>
<td>Practical applications</td>
<td>3.74</td>
<td>1.276</td>
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<tr>
<td>More ICT courses</td>
<td>3.68</td>
<td>1.453</td>
<td></td>
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</tr>
</tbody>
</table>

Table VIII.

Perceptions about ICT instruction needed enhancements and improvements

**Note:** *p < 0.05
ICT competence level. There was a consensus among the focus group participants that most students possessed basic ICT skills as they took introductory computing courses prior to taking the information studies courses. However, they did not appear to have taken courses in programming, database management, networking, and Web 2.0 courses. The instructors from PAAET, however, emphasized that no specific assessment of ICT skills was used as admission criteria and the level of skills may not be the same across the board.

Relevance of competencies to the job market. Instructors reported that the primary job market for PAAET graduates was in school libraries and media centers. Some were absorbed in ICT positions in other organizations. There have been no complaints about their performance from their employers. This may reflect that their competence somehow satisfies the needs of the market. On the other hand, instructors from KU pointed out that the ICT component in the information studies courses was not targeted for an apparent job market as the graduates were employed in the areas related to their major such as psychology, sociology, political science, geography and social work. These instructors observed that the information studies courses and the ICT modules were presumably instrumental in their improved performance in their respective positions.

Course content. The instructors in the focus group felt that the student perception about their level of skills may not be a true reflect of the reality. They felt that there was a need to expand the content to strengthen their ICT competencies. They felt there was a definite need for adding courses in the areas of digitization, Web 2.0, e-publishing, information architecture. The focus group participants felt that there was also a need to upgrade the ICT knowledge and skills of instructors.

Hands on component. Instructors from both the institutions felt that there was a clear-cut need to strengthen the practical orientation of ICT modules. They pointed out the need for more hands on session and better support through increased number of teaching assistants with ICT experience. The instructors felt that the recent expansion and upgrading of IT labs was encouraging. These facilities are expected to provide better support for additional lab sessions and tutorials.

Discussion and conclusions
In general, the students seem to be content with the facilities and resources available in the two academic institutions. There were only a few areas where they showed their dissatisfaction. These areas were related to ICT support, e-learning systems, and layout and working hours of laboratories. In their suggestions for improvement, the students indicated the need for enhancing computing facilities, technical support, software applications, and internet connections.

The instructors of the two institutions had a somewhat different view. They thought that the content of the ICT curriculum needed to be enriched. In a number of areas, fresh coursework needed to be designed, which included digitization, Web 2.0, e-publishing, etc. The evolving job market will have a great deal of promise if these competencies are developed among these students.
The instructors felt that the job markets for the graduates of two institutions were different and the ICT instruction need to reflect this reality. At KU the graduates are specializing in an area of social sciences and information studies is the minor for them. These graduate needed ICT skills in order to perform their professional jobs more effectively by using the latest ICT applications. The PAEET graduates, conversely, were being prepared to be employed in the job market of media centers in schools and ICT operations of the corporate market. This needed to be reflected in course content and instructional approaches. The PAEET graduates should have better commend on the skills whereas the KU graduates need to approach ICT from an integrated view of theory and practice.

One of the significant findings of this research was that students indicated their satisfaction with their ICT skills, where as instructors noted that additional measures needed to be taken for making the graduates’ competencies more relevant to the job market. In this regard, they wished that course content was upgraded and better opportunities for hands-on training needed to be provided. Admittedly, development of ICT is a continuing process and there should be strategies and measures that gauge these skills as needed to be further nurtured on a continuing basis.

This study pointed out that the job market is the determining factor and if these skills make the graduates employable, then the graduates and employers will be equally satisfied. As the field of ICT is dynamic, there is always a need to equip students with appropriate skills and keep them continually updated. It is interesting to note that all major studies reviewed indicated that there was a gap between the ICT skills provided by the information studies programs and the ICT skills considered important by the prospective employers. This was also reported in an earlier study done in the higher education sector in Kuwait (Buarki et al., 2009). The instructors of information studies in the two institutions were vehement in observing that the Kuwaiti job maket demanded fresh skills and these could only be developed if new courses are added to the curricula, faculty members are better prepared to teach these courses, and opportunities for tutorial and laboratory training are strengthened.

One critical factor in education is the availability of textual, extra-textual, and supplementary reading materials. Since medium of instruction in these schools is Arabic, English-reading proficiency of these students is minimal. Since the students were not satisfied with the availability of Arabic materials, there is a need to critically examine the situation of creation, development, and distribution of these materials. At this point, many teachers are providing translated versions of some readings, which provides students with constrained access and it may also have copyright implications. It is widely realized that there is in general a lack of textbooks on ICT in Arabic and many are not sophisticated enough for developing appropriate skills for the job market. Most faculty members prepare handouts comprised of copies of selected readings. Perhaps, there is a need to incorporate bilingual courses, adding some sections in English to meet the ever-changing demands of ICT instruction in the market. Also there is a need for collaboration with professional forums for such revisions in curricula and continuing education programs in order to meet the needs of the ever changing market.

The role of the faculty members in the learning process cannot be over-emphasized. While students were generally satisfied with the competence and performance of their instructors, perceptions of KU students were significantly higher. One reason might be that at KU, the minimum qualification required for appointment of a faculty member
is a PhD degree whereas PAAET engages a large number of Master degree holders as visiting lecturers. KU faculty also uses the blackboard e-learning system. The e-learning platform provides students opportunities of extended communication and interaction with the faculty. The results also showed that KU students rated the technical competence of the teachers as compared with the perceptions of PAAET students about their teachers. Perceptions about these competencies can have a positive effect on the overall satisfaction of students. Since the ICT changes quickly, instructors need to keep themselves up-to-date. Instructors at KU are relatively young and 80 percent of them got their PhD from reputable schools after the year 2004. These factors might have contributed to better perceptions of the students at KU.

This study has provided viable findings about ICT courses and skills using the perspectives of students and respective instructors. These findings may be useful in strengthening ICT component in the two higher education institutions of Kuwait by taking into consideration the points raised by both the students and their teachers. This is expected to satisfy the vital needs of the job market.

References


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