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EFL student and faculty perceptions of and attitudes towards online testing in the medium of Blackboard: Promises and challenges

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This study explored EFL students and faculty's perceptions of and attitudes towards the use of online assessment and practice. A descriptive method was used, employing quantitative data collection and analyses from a sample of 400 students of different age categories and educational levels and another sample of 25 teachers in the English department. Results showed that students' attitudes towards e-testing are generated by the test-takers' perceptions of self-efficacy, enjoyment, usefulness, behavioural intentions to use web-based assessment, system satisfaction and system challenges in the order of the responses of the students. Furthermore, attitudes towards e-testing are generated by the students' salient beliefs about the consequences of continued use and the evaluation of online testing technology. Web-based assessment and practice provided students with immediate feedback and automated scores that help students to have more control over their work and their effort. The findings from this study imply that creating web-based assessment technology awareness, motivation, and changing faculty and learners' behaviours and attitudes is required for the success of e-testing adoption, implementation and diffusion in the future.

Keywords: EFL, online testing, LMS, teacher attitudes, learner attitudes

Introduction

Educational assessment is a significantly integral phase of learning that is concomitant with the different phases of learning initially in placement and diagnostic tests, medially as a formative procedure and finally as in summative measurement of

learning outcomes. Furthermore, assessment can be a cyclical process in which the learners could be assessed periodically in order to check on their progress using home assignments and observation of learning procedures.

Learning outcomes, or achievement, assessment can be incorporated in a quiz, a homework assignment, a set of questions, a test, a project, a portfolio, or a presentation. With developments in learning delivery platforms, and the massive use of e-learning, assessment is also becoming widely done online. By definition, online assessment is method of using networked computers to deliver and analyse both achievement and performance tests.

Online testing, also known as "Computer Assisted Assessment (CAA), is that sector of e-learning aimed at assessing learners' knowledge through e-learning means" (Costagliola & Fuccella, 2009, p. 63), being independent of time and place, and more significantly, cost-effective and efficient.

Generally, online testing, often including e-tests and homework assignments, can play a crucial role in e-learning as it can reinforce learning. Online assessment procedures can potentially promote students' self-discipline, independence and responsibility characteristics (McPherson, 2005). The aim of an assignment is to teach students how to study independently, plan for learning and test-taking efficiently, and get organized in group assignments help promote thinking individually and collaboratively (Sgouros & Martin, 2005).

The growing use of online testing as a global trend and the fast-growing introduction of online assessment in Saudi education systems has engendered an interest in conducting systematic research into the effectiveness of online testing in terms of efficiency and usefulness (AlNajdi, 2014). This study seeks to answer urgent call for needed research on online assessment, especially in the context of Saudi Arabia. A thorough search in databases for research done to evaluate online educational assessment in Saudi Arabia revealed nearly no single study on the topic. This paucity in research on e-testing in Saudi Arabia speaks loudly to the need for systematic empirical research in the area of online assessment in English language teaching to recognize the perceptions and attitudes of students and faculty in the most leading e-learning university in Saudi Arabia.

Research question

The main research question in the present study is:

- *What are the EFL students and faculty's perceptions of and attitudes towards the use of online assessment and practice in a Saudi university?*

This question bore out the following sub-questions:

1. How do EFL students and faculty perceive of the self-efficacy of the online assessment system?
2. How do EFL students and faculty perceive of the usefulness of the online assessment system?
3. How do EFL students and faculty perceive of the system challenges of the online assessment system?
4. How do EFL students and faculty perceive of their enjoyment of the online assessment system?
5. How do EFL students and faculty perceive of their behavioural intentions to use online assessment procedures?

6. How do EFL students and faculty perceive of their satisfaction with the online assessment system?

Purpose of the study

Upon recent suggestions of the use of online testing methods in enhancing language teaching and learning and attitudes thereto, this study seeks to explore the students and faculty perceptions of online assessment and practice as regards language learning attitudes. Explicating unique capabilities of the innovative online assessment practices on making significant contributions to traditional evaluation practice would be eventually conducive to recommendations for massive future use and appropriate development of online assessment and tutorial system like Blackboard.

Literature review

Research on college-level online learning, though spare and sparse, as analysed in the synthesis study by Patrick & Powell (2009), revealed "no significant difference" in student performance in online courses versus traditional face-to-face courses; and in particular programmes, researchers also found that students learning online are performing "equally well or better" than their peers in traditional instructional media (Patrick & Powell, 2009, p. 8).Consequently, e-learning evaluation studies further suggested other factors that interfere with the adoption of technology for classroom practices' acceptance and adoption of new systems or services; of such are the following: (1) user satisfaction (e.g., Arbaugh, 2000; Burns, Clift & Duncan, 1990; Hsu, Yen, Chiu, & Chang, 2006; Liao, Chen, & Yen, 2007), (2) learners' and teachers' motivation and attitudes (e.g., Bhattacherjee & Sanford, 2006; Mekheimer, 2012; Ushida, 2005), (3) perceived usefulness (e.g., Roca, Chiu, & Martinez, 2006; Liao, et al., 2007; Gefen, 2003; Hsu and Lu, 2004), (4) perceived ease of use (e.g., Roca, et al., 2006), and (5) quality (e.g., Chiu, et al., 2005; McKinney et al., 2002; Roca et al., 2006). However, the relationship between the initial technology acceptance and post-adoption of a service of e-learning has seldom been investigated, especially in the Arab world (Fageeh, 2011).

Currently, several educational researchers (Chang, Hsu & Fang, 2010; Hristova, 2008; Sokolova & Totkov, 2005) predicted that e-testing will eventually replace conventional testing procedures, thus becoming the main assessment activity at universities. Thus, the need for efficient e-testing environments and methods, as well as good authorware and instructors for their support arises urgently.

Bennet (2001) further describes online assessment as an "interactive, broadband, networked, and standard-based" evaluation instrument. The case being thus, online assessment can afford a large number of randomised items with immediate scoring and feedback, a rapid return of a large number of tests and survey results (Bennet, 2001; Linn, 2002) as well as provide an automatic diagnosis system for performance evaluation (Nguyen & Kulm, 2005). A few decades ago, with the emergence of Java, JavaScript and HTML, online assessment has become an interactive medium for delivering both formative and summative assessment, given the myriad of benefits associated with online testing. According to Hovland (2005), online testing is more affordable, efficient, and can measure language learning skills unmeasurable on conventional tests under less stress. In addition, online data storage facilitates testing management and security of data through data encryption.

As such, the convenience, rapidity, and efficiency of online testing will gradually lead to the partial disappearance of traditional testing methods, being widely replaced by online tests.

Further, and above all, online testing can provide students with more opportunities "for practice, self-testing, self-regulation, and self-evaluation while teachers receive feedback from students, save time in reading and grading, and eventually have closer interactions with students." (Nguyen, Hsieh, & Allen, 2006, p. 252). Some research indicated that by resorting to online assessment, teachers can integrate different content areas with language instruction and enhance learners' attitudes and motivation towards learning (Fleischman, 2001; Morgan & O'Reilly, 2001; Nguyen, Hsieh, Jane & Allen, 2006).

EFL students' attitudes towards learning vary based on characteristics of classroom factors such as instruction and assessment and their delivery methods and tools (Hart & Walker, 1993). In addition, Steele & Arth (1998) indicated that the flexibility of accepting students' ways of solving problems as is the case in online testing can increase students' participation, reduce anxiety, and induce positive attitudes for enhanced learning. Web-based applications harnessed for both instruction and assessment can create different learning and evaluation contexts as well as produce flexible approaches to learning, teaching and assessment (Allen, 2001; Liang & Creasy, 2004). Flexible teaching and learning are learner-based, less time-and-place-dependent than traditional forms of teaching, and are designed to increase the learner's responsibility for their own learning. Flexible learning and teaching also caters for variation in individual differences and can induce self-directed learning practice. In addition, flexible assessment gets rid of face-to-face contact that causes test anxiety, always makes use of technology, saves time and money, and provides immediate feedback which is essential for effective learning.

According to Middleton & Spanias (1999, cited in Nguyen, et al., 2006, p. 254), "assessment provided on the web-based medium allows students to have more control over their practice and to receive immediate reinforcement that can help build their intrinsic motivation and improve their confidence". Across other disciplines such as science and mathematics inasmuch as the case in content-integrated language teaching, researchers concurred that online assessment applications could back up and improve students' levels of confidence, motivation, engagement and interaction (Galbraith & Haines, 1998; Alderson, 2000; 2006). Additionally, web-based assessment has the potential to meet the authentic assessment standards (ones that are amenable to assessment in an observable and measurable fashion) defined by Kulm (1994) which serve learning objectives, namely: 1) improvement of instruction and learning; 2) providing feedback for the students to aid the in observing to inappropriate strategies, thinking or habits; and 3) improvement of attitudes towards learning (Kulm, 1994, p. 4). In that way, online assessment can help reinforce learning objectives by providing immediate feedback, reinforcing appropriate learning strategies, enhancing thinking habits, and eventually inducing enhanced attitudes, and as such, can help meet the demands of authentic assessment.

Previous research on the integration of online assessment technology into language learning and teaching has shown promising and positive effects in relation to attitude improvement and enhancement of motivation as well as improved performance (Johnston & Barker, 2002; Shi, 2012; Brantmeier, 2006; Chalhoub-Deville, 2001; Chapelle, 2001; Choi, Kim & Boo, 2003; Dikli, 2006; Goodwin-Jones, 2001; Hemard & Cushion, 2003).

Limitations of online assessment technologies

Despite its flexibility and malleability, web-based assessment has several limitations. For instance, students must have reliable access to networked computers without time restrictions. Some technical hitches, such as sluggish internet connection, network jams, or sudden disconnections may render these assessment tools ineffective.

Web-based assessment does not provide partial credits and cannot sufficiently grade short answers and essay questions, either. Research also indicated that the level of computer familiarity or technological literacy also affects achievement on online tests (Brantmeier, 2006; Choi, et al., 2003; Dikli, 2006; Elder, et al., 2007; Hegelheimer & Chapelle, 2000; Kern, 1995; Liou, 2000; Roever, 2001; Thurmond, et al., 2002).

In addition, Nguyen, et al. (2006, p. 255) aptly observed that "to meet the current demands of the technological era, web-based practice has continued to be developed, and has perpetually improved its unique features and characteristics" – an observation that resonates with prior research findings and recommendations (e.g., Alderson & McIntyre, 2006; Coniam, 2003; Gorsuch, 2004) through introducing help options and multimedia incorporated into the online interactive test (Hegelheimer & Chapelle, 2000), investigating more effective methods of responding to student papers (Krucli, 2004), developing and trying bilingual computerized test of vocabulary size (Laufer& Goldstein, 2004), applying dynamic assessment, which focuses on process rather than on the product, to CMC language development (Oskoz, 2005),using input-environment outcome assessment model to control for student characteristics in order to decrease bias (Thurmond, et al., 2002; Volchok, et al., 2006), and understanding intercultural communication, mediated by cultural artefacts (i.e., internet communication tools), for creating compelling, problematic, and surprising conditions for additional language learning (Thorne, 2003; Thorne & Payne, 2005; Weber & Abel, 2003).

Reviews of several years of development in computer-based testing are now accruing, touching on transfers from paper-based to computer-based tests, computer adaptive testing, the use of corpus data to increase authenticity, and natural language processing developments in machine scoring of written language (Jamieson, 2005). These reviews have also discussed the pros and cons of assessment of learner strategies in CALL (Liou, 2000).

Notwithstanding the defects of and cons against online testing methods, the web-based technology is now emerging as one of the best media of user interface and instructional delivery and assessment. Web-based assessment, eventually, lends itself to constitute an integral part of the curriculum and learning process (Allen, 2001; Heift, & Schulze, 2003; Hemard, & Cushion, 2003). The benefits of web-based assessment inspire researchers to take endeavours to evaluate this inevitably new alternative to the traditional paper-based tests that are going obsolescent nowadays.

Hypotheses

The present study sought to verify the following hypotheses:

1. There is as statistical difference between students' responses and rankings of the factors influencing their perceptions of their attitudes towards e-testing across age categories of students.
2. There is a statistical difference between faculty's attitudes towards online testing across teaching/testing experience using new technology.

Methodology

Method

This study applied a descriptive method employing quantitative data collection and analyses methods through the administration of two instruments: Students' Perceptions and Attitudes towards Online Testing Survey and Faculty's Perceptions and Attitudes towards Online Testing Survey.

Sample

The *Students' Perceptions and Attitudes towards Online Testing Survey* was distributed to a sample of 400 students of different age categories and educational levels randomly drawn from the student population of the English programme of the Faculty of Languages & Translation, King Khalid University. The *Faculty's Perceptions and Attitudes towards Online Testing Survey* was submitted online to a random sample of 25 teachers in the English department of the same institution.

Reliability and validity of the instruments

To determine the internal validity of the *Students' Perceptions and Attitudes towards Online Testing Survey*, a Cronbach alpha was calculated on a sample of EFL learner population (N =400), using SPSS (alpha = 0.971).

Further, to determine the internal validity of the *Faculty's Perceptions and Attitudes towards Online Testing Survey*, a Spearman-Brown Coefficient was calculated by distributing the questionnaire to a sample of teachers involved in e-teaching (N =25). The Spearman-Brown Coefficient was calculated using SPSS (alpha = 0.963(.

Results

Informants of the study (N = 400) fall into an array of age categories, with most of them being in the age range from 20 years of age to 23 years of age enrolled in advanced levels of the English programme.

Students' attitudes towards online testing

As the tables below show, it appears that most respondents do not feel the test jitters upon using e-learning environments or labs for taking their e-tests.

Perceived self-efficacy. Self-efficacy refers to test takers' judgment of their own ability to perform specific tasks (Lee, 2006).

Table 1: Perceived self-efficacy

Perceived self-efficacy	Mean	SD	Minimum	Maximum
I feel confident taking an online test.	3.80	1.158	1	5
I feel confident using the Blackboard system for taking different types of online tests, including essay tests and objective tests.	3.56	1.289	1	5
I do not feel the test jitters associated with using e-learning environments or labs for taking my e-tests.	3.86	1.152	1	5

Table 1 data show that students, in general, do not feel test anxiety when they take their tests using e-testing labs, then on the second rank, they feel confident taking online tests, while the least rank goes for feeling confident using Blackboard tools for taking different web-based assessment tasks. Indeed, no matter how advanced or powerful a technology is, its effective implementation depends upon users having positive attitudes towards it as well as having higher levels of self-efficacy in using computers for teaching and learning (Wu, Tennyson, & Hsia, 2010).

Perceived enjoyment. Perceived enjoyment refers to the students' perceptions of the ease of use of the e-testing system as well as to their perceptions of the content quality. Perceived ease of use (PEOU) of an e-learning and/or e-testing system is defined as the degree to which an individual believes that using a particular technology for learning or for testing will be fun and free of effort (Lee, 2006; Davis, 1989). On the other hand, perceived content quality refers to the assumption that information quality is significant in determining users' level of satisfaction with the system, which, in turn, leads to system utilisation for teaching and assessment. There are two dimensions of content quality: 'content richness', and 'update regularity'. The first of these, "content richness", positively affects learners' or test-takers' levels of satisfaction with the course/e-test (Burns et al., 1990; Arbaugh, 2000). The richness of an e-course or an e-test content can be improved by providing additional educational/psychometric software on a CD-ROM. In other words, the learners' perceptions of the content quality and ease of use related to the online testing system shape the learners' attitudes towards its use and behavioural intention to make use of an e-testing system.

As can be seen in Table 2 below, the students showed that they enjoyed using the Blackboard system for test-taking most, and in general, they enjoy using computers as a test-taking assistive tool in second rank, and third, they enjoy using the Grade Centre for knowing about their results.

This aspect of attitudes towards e-testing – perceived enjoyment – postulates that usage behaviours of individuals towards online testing are shaped by the experiences with the technology (Agarwal & Karahanna, 2000; Davis, 1989; Davis, Bagozzi, & Warshaw, 1989; Lederer et al., 1998). On the other, perceived ease of use is an individual's assessment that technology interaction will be relatively free of cognitive burden, i.e., ease of use reflects the facility with which the individual is able to interact with a particular software artefact. Overall, perceived enjoyment and perceived self-efficacy indicated positive attitudes towards e-testing as well as heightened intrinsic motivation for using a computer-mediated system (CMS) for regular web-based assessment. This finding echoes prior research that related

perceived ease of use and enjoyment to enhanced e-teaching experience (e.g., Roca, et al., 2006; Venkatesh, 2000).

Table 2: Perceived enjoyment

Perceived enjoyment	M	SD	Min	Max
I enjoy using computers as a testing-taking assistive tool.	4.07	.986	1	5
I enjoy using e-learning environment for testing purposes.	4.18	1.080	1	5
I enjoy using the Blackboard Grade Centre for testing-taking.	3.84	1.097	1	5

Perceived usefulness. The perceived usefulness of a teaching/testing online system is defined as the extent to which individuals believe that using the new technology will enhance their task performance (Lee, 2006; Davis, 1989).

Results shown in Table 3 below demonstrate that students believe that using online testing technology is useful for taking language assessments the most while they believe the least that using the Blackboard environment for e-learning purposes can be helpful for language assessment. They strongly believe that using e-learning environments, overall, is helpful for online test taking. Prior research indicated that perceived usefulness and perceived enjoyment have direct positive effects on the intention to use an LMS efficiently, as they have direct positive effects on the intention and motivation to use e-learning and e-testing technologies – findings commensurate with those of prior research (Lee, 2010; Roca and Gagné, 2008).

Table 3: Perceived usefulness

Perceived usefulness	M	SD	Min	Max
I believe using e-learning environments is helpful for language assessment.	3.75	1.190	1	5
I believe using e-learning environments is helpful for e-testing.	4.03	1.144	1	5
I believe online assessment is useful for taking language tests.	4.10	1.042	1	5

Behavioural intention to use e-testing. According to Lee (2006, pp. 519), within an e-learning context, "the adoption of ELS is a positive function of the intention (BI) to accept the system." Given the significance of affective factors in predicting and improving e-learning, e-teaching and e-testing (See for example, Liaw, et al., 2007), new issues and considerations related to post-adoption of e-learning tools and continuance intention on the part of language teachers, particularly the role of attitudes and motivation, have recently given rise to nascent research stamina (Abdullah, Abidin, Luan, Majid & Atan, 2006; Lin, 2011; Lonn, et al., 2011; Sugar, Crawley, & Fine, 2004).

Results in Table 4 indicate that students showed behavioural intentions to use the Grade Centre to train on major and minor testing, and then in the second rank, they showed intentions to use online assessment facilities to access the procedures and outcomes of their regular evaluation. Third, they showed the least behavioural intentions to use Blackboard's Grade Centre to check their grades on major and minor assessments and assignments. Prior research indicates that perceptions of the usefulness and ease of use of

e-learning technology influences students' attitudes towards behavioural intentions and actual use of CMSs (Fageeh, 2011) as are teachers' being influenced by extrinsic motivation and confirmation of pre-acceptance expectations (Sørebø, et al., 2009).

Table 4: Behavioural intention to use e-testing

Behavioural intention to use e-testing	M	SD	Min	Max
I intend to use the Grade Centre to check grades on major and minor assessments.	3.92	1.115	1	5
I intend to use the facilities of the Grade Centre.	4.17	.965	1	5
I intend to use the Grade Centre to train on major and minor testing.	4.24	.913	1	5

Perceived system satisfaction. Positive attitudes towards e-testing technology has previously been associated with perceived system satisfaction (Hsu, Yen, Chiu, & Chang, 2006; Liao, Chen, & Yen, 2007). According to Lee (2006), several rigorous studies suggested that "information quality is important in determining users' level of satisfaction with the system, which in turn, leads to system utilisation" (p. 521).

Results from the present research showed that informants of the study indicated that they are satisfied most with using Blackboard online testing tools, while they are satisfied least with using the facilities of the Grade Centre to take valid and reliable language assessments. They showed also satisfaction with using e-learning environments and/or testing labs for language web-based assessment in the second rank. This result is consistent with some previous studies (Burns et al., 1990; Arbaugh, 2000).

Table 5: Perceived system satisfaction

Perceived system satisfaction	M	SD	Min	Max
I am satisfied with using e-learning environments and/or testing labs for language test-taking.	3.96	1.319	1	5
I am satisfied with using the facilities of the Grade Centre to take valid and reliable language assessments.	3.93	1.074	1	5
I am satisfied with using the online assessments via Blackboard.	4.06	1.084	1	5

Perceived system challenges. E-learning and e-testing systems are fraught with a plethora of challenges and demands that require a more rigorous engineering approach, testing and re-testing with real users, in order to meet these demands. Of these challenges are testing schedules, and the testers' as well as testees' timetables, internet connectivity hitches, interruptions and assistance online with test-taking. Results from the present research showed that informants of the study indicated that test scheduling difficulties come in the first rank as perceived problems by the students, then come discipline problems during testing sessions, such as noise, confusion or cheating, then come connectivity problems, and finally problems seeking help with test administrators during testing sessions.

Table 6: Perceived system challenges

Perceived system challenges	M	SD	Min	Max
I find difficulty scheduling my time to match the tester's timetables for e-testing.	3.81	1.162	1	5
My colleagues are uncontrollable in terms of discipline	3.78	1.092	1	5
There are Internet connectivity problems/technical hitches that may interrupt the test-taking process.	3.88	1.035	1	5
I rarely receive help from the test administrators in the e-testing labs.	3.85	1.081	1	5

Summary of student survey findings. Students' attitudes towards e-testing are generated by the test-takers' perceptions of self-efficacy, enjoyment, usefulness, behavioural intentions to use web-based assessment, system satisfaction and system challenges in the order of the responses of the students. Attitudes towards e-testing are generated by the students' salient beliefs about the consequences of continued use and the evaluation of these consequences (Ajzen, 1988). Such beliefs regarding self-efficacy, enjoyment, usefulness, system satisfaction and the challenges and outcomes of use provide strong internal incentives for the adoption of e-testing (Davis, et al., 1989). These factors be generally divided into three major types of measurements: affective, cognitive and behavioural.

Table 7: Order of the factors impacting students' attitudes towards e-testing

Factors/Survey sections	Mean	Std. Deviation
Perceived self-efficacy	3.74	1.20
Perceived enjoyment	4.03	1.05
Perceived usefulness	3.96	1.13
Behavioural intention to use e-testing	4.11	1.00
Perceived system satisfaction	3.98	1.16
Perceived system challenges	3.83	1.09

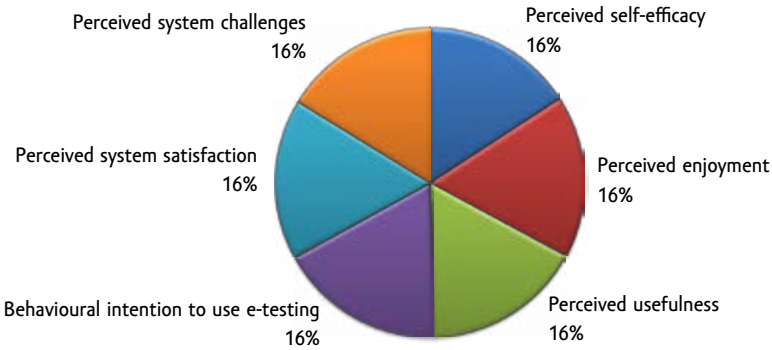

Figure 1: Students' attitudes towards online testing: order of influential factors

Effect of age. The researcher ran a one-way ANOVA to analyze the differences between students' means of their responses to the factors affecting their attitudes towards e-testing designated by the six sections of the survey and their associated procedures (such as "variation" among and between groups) to see if there were any differences between informants on the variable of age. Results are presented in Table 8 below:

Table 8: ANOVA for the factors affecting students' attitudes towards e-testing by age

Factors impacting students' attitudes	Source of variance	Sum of squares	*df*	Mean square	*F*	Sig.
Perceived enjoyment	Between Groups	740.571	2	370.286	60.391	.000
	Within Groups	2434.189	397	6.131		
	Total	3174.760	399			
Perceived usefulness	Between Groups	999.663	2	499.832	74.970	.000
	Within Groups	2646.834	397	6.667		
	Total	3646.497	399			
Behavioural intention to use e-testing	Between Groups	698.637	2	349.318	67.557	.000
	Within Groups	2052.761	397	5.171		
	Total	2751.398	399			
Perceived system challenges	Between Groups	978.637	2	489.319	80.563	.000
	Within Groups	2411.260	397	6.074		
	Total	3389.898	399			
Perceived system challenges	Between Groups	1951.774	2	975.887	95.670	.000
	Within Groups	4049.624	397	10.201		
	Total	6001.398	399			
Attitudes towards online evaluation	Between Groups	39305.906	2	19652.953	102.069	.000
	Within Groups	76440.934	397	192.546		
	Total	115746.840	399			

As shown in Table 10 above, the ANOVA tests revealed that the students' attitudes towards online testing according to their age indicate that there is as statistical difference between students' responses and rankings of the factors influencing their perceptions of their attitudes towards e-testing across age categories if the informants.

Faculty's perceptions and attitudes towards online testing survey

The following tables show the frequencies and percentages of teachers' responses by the variables of age and experience; the perceptions and attitudes' survey for faculty was administered to 25 faculty members of varied ages and experience. Analysis of demographic data of faculty respondents indicate that 40% of the faculty sample were between 30 and 40 years of age, 36% were more than 36 years old, and 24% were less than 30 years old. Further analysis of demographic data of faculty indicate that 48% of the sample were of experience above 10 years, 28% were of experience less than 5 years, and 24% were of experience from 5 to 10 years.

Results of faculty analysis of their perceptions and attitudes towards online testing. The following tables show the mean scores, standard deviation and maximum versus minimum scores for each item on each section of the faculty's survey; it appears that the higher the score, the more frequently respondents do not feel the test jitters associated with using e-testing environments or labs for administering or giving their e-tests to their students.

Table 11: Perceived self-efficacy

Perceived self-efficacy	M	SD	Min	Max
I feel confident administering online assessment.	3.80	.707	2	5
I feel confident using Blackboard for testing students.	3.40	.764	2	5
I feel confident using e-learning environments for e-testing.	3.80	.764	2	5

Perceived self-efficacy. This aspect of informants' attitudes indicate that perceived self-efficacy refers to test administrators''/test makers' judgment of their own ability to administer specific testing tasks during testing sessions. Data in Table 11 show that test-administrators perceive self-confidence giving web-based tests is ranked of top significance, followed by confidence using the Blackboard for e-testing and confidence using e-testing labs for conducting e-testing sessions.

Perceived enjoyment. This aspect of informants' attitudes indicate that perceived enjoyment refers teachers' perceptions of the ease of use of the e-testing system as well as to their perceptions of test administration in e-testing labs. Data in Table 12 show that test-administrators enjoy using computers as a test-making assistive tool, as well as using the e-testing environment for testing purposes, and finally using Blackboard Grade Centre for test-making and results announcements.

Table 12: Perceived enjoyment

Perceived enjoyment	Mean	SD	Minimum	Maximum
I enjoy using computers as an assistive testing tool.	4.04	.841	2	5
I enjoy using e-learning for testing purposes.	3.72	.843	2	5
I enjoy using the Grade Centre for test-making.	3.88	.833	3	5

Perceived usefulness. Lee (2006) defines perceived usefulness of using web-based assessment as the beliefs of users, in this case, teachers' assumptions that using the new technology will enhance their task performance. Results in Table 13 show that most teachers believe that web-based assessment environments are helpful for language evaluation; in general, these environments are also useful for testing for different purposes in the language classroom, and are finally, they are useful for conducting language assessment that follows e-learning as in web-based assignment and home-work tasks.

Table 13: Perceived usefulness

Perceived usefulness	Mean	SD	Minimum	Maximum
I believe using e-learning environments is helpful for language assessment.	4.00	.957	1	5
I believe using e-learning environments is helpful for testing.	3.88	.881	2	5
I believe using online instruction is useful for conducting language assessments.	4.36	.810	3	5

Perceived behavioural intention to use e-testing. Lee (2006) defines behavioural intention to use e-testing environments as the adoption of new technology being a positive function of the intention of teachers to accept the system for web-based assessment. Results in Table 14 show that most teachers have intentions to use Blackboard's Grade Centre to assist them in conducting their online tests and in doing different types of evaluation, formative and summative.

Table 14: Behavioural intention to use e-testing

Behavioural intention to use e-testing	Mean	SD	Minimum	Maximum
I intend to use Blackboard's Grade Centre to assist my testing.	3.48	.918	2	5
I intend to use online assessment to assist my evaluation.	4.08	.812	3	5
I intend to use the Grade Centre to assist my testing.	4.04	.841	3	5

Perceived system satisfaction. This determinant of teachers' attitudes towards online testing refers to users' level of satisfaction with the system, which in turn, leads to system utilisation. Results in Table 15 show that most teachers are satisfied with using web-based assessment technology in labs, including the facilities of the Grade Centre, which help in validating tests and keeping them reliable for use.

Table 15: system satisfaction

Perceived system satisfaction	Mean	SD	Minimum	Maximum
I am satisfied with using e-learning environments and/or testing labs for language testing.	3.12	1.166	1	5
I am satisfied with using the facilities of the Grade Centre to conduct valid and reliable language assessments.	4.00	.913	2	5
I am satisfied with using online assessments via Blackboard.	3.80	.866	2	5

Perceived system challenges. This factor impacting teachers' attitudes towards online testing refers to the difficulties using online testing technology. Results in Table 16 show that most teachers have a great difficulty with booking e-testing labs due to paucity in

web-based facilities; as well, there is an expansion in using web-based assessments as an increasing testing medium. Next come problems with keeping order and discipline during e-testing sessions, then connectivity and technical problems and finally seeking assistance from lab technicians.

Table 16: Perceived system challenges

Perceived system challenges	M	SD	Min	Max
I find difficulty booking an e-testing lab due to heavy use of the labs along the semester.	4.04	.841	3	5
Students are uncontrollable in terms of discipline in the e-testing labs.	3.80	.764	3	5
There are Internet connectivity problems and other technical hitches that may interrupt a test and spoil it.	3.80	.764	3	5
I rarely get technical assistance from the e-testing lab technician.	3.20	.866	2	5

Summary of faculty survey findings. Teachers' attitudes towards e-testing are generated by the test-makers' perceptions of self-efficacy, enjoyment, usefulness, behavioural intentions to use web-based assessment, system satisfaction and system challenges in the order of the responses of teachers. This order is akin to the order of responses of informant students which shows some kind of similitude in the perceptions of teachers and students as to the main factors impacting attitudes towards online testing. Attitudes towards e-testing are generated by the teachers' significant beliefs about continued evaluation using web-based assessment technology. Such beliefs regarding self-efficacy, enjoyment, usefulness, system satisfaction and the challenges and outcomes of use provide strong internal incentives for the adoption of e-testing on the part of teachers as it is on the part of students (Davis, et al., 1989).

Table 17: Order of the factors impacting faculty's attitudes towards e-testing by means of their responses

Factors/Survey sections	Mean	Std. Deviation
Perceived self-efficacy	3.67	0.75
Perceived enjoyment	3.88	0.84
Perceived usefulness	4.08	0.88
Behavioural intention to use e-testing	3.87	0.86
Perceived system satisfaction	3.64	0.98
Perceived system challenges	3.71	0.81

Effect of age. Again, the researcher ran a one-way ANOVA to analyze the differences between teachers' means of their responses to the factors impacting their attitudes towards e-testing designated by the six sections of the survey and their associated procedures to see if there were any differences between informants on the variable of experience. Results are presented in Table 18 below:

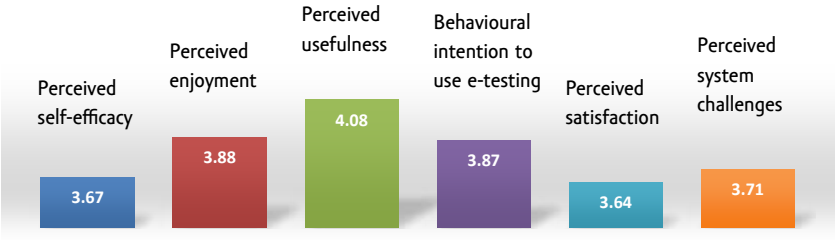

Figure 2. Faculty attitudes towards online testing

Table 18: ANOVA for the factors affecting faculty's attitudes towards e-testing by age

Factors impacting attitudes	Source of variance	Sum of squares	*df*	Mean square	*F*	Sig.
Perceived enjoyment	Between Groups	40.643	2	20.321	23.096	.000
	Within Groups	19.357	22	.880		
	Total	60.000	24			
Perceived usefulness	Between Groups	37.153	2	18.576	10.064	.001
	Within Groups	40.607	22	1.846		
	Total	77.760	24			
Behavioural intention to use e-testing	Between Groups	29.846	2	14.923	8.480	.002
	Within Groups	38.714	22	1.760		
	Total	68.560	24			
Perceived system challenges	Between Groups	32.000	2	16.000	5.029	.016
	Within Groups	70.000	22	3.182		
	Total	102.000	24			
Perceived system challenges	Between Groups	21.042	2	10.521	4.224	.028
	Within Groups	54.798	22	2.491		
	Total	75.840	24			
Attitudes towards online evaluation	Between Groups	38.181	2	19.091	5.304	.013

As shown in Table 18, the ANOVA tests revealed that the attitudes of teachers towards online testing according to the age variable indicate that there is a statistical difference between faculty's attitudes towards online testing across teaching/testing experience using new technology.

Discussion

The expediting diffusion of technology for use in both e-learning and e-testing has made available more apt opportunities for students and teachers alike to improve learning and achievement outcomes. There is growing enthusiasm to use the new technology as a national goal. The Ministry of Higher Education in Saudi Arabia is encouraging, by

financial incentives and through providing infrastructure to universities, technology users to get acculturated to the new technology atmosphere for both e-learning and e-testing purposes. Therefore, all Saudi universities and teacher training institutions have taken positive steps in equipping pre-service teachers with knowledge and skills in information technology.

Web-based assessment and practice provided students with immediate feedback and automated scores that help students to have more control over their work and their effort. The students' survey results related to their perceptions and evaluation of the web-based assessment endeavours indicated that both test-takers' and faculty's self-efficacy, enjoyment, usefulness, behavioural intentions to use web-based assessment, system satisfaction and system challenges in this order appeared to be the most attractive features of the web-based learning that formed the attitudes towards e-testing and generated the students' and faculty's salient beliefs about the consequences of continued use and the evaluation. These features might also affect the students' success or failure in the acceptance and subsequent adoption of e-testing technology, and consequently in foreign language learning.

In addition, results from the present study, fortunately commensurate with prior research and relevant literature on e-learning and e-testing, have showed that both external factors impacting the formation of attitudes towards e-testing, including the social environment and learning management systems and the internal factors, including individual characteristics of teachers and students are crucial for efficient online assessment adoption, implementation, and diffusion. By the same token, a higher level of individual computer self-efficacy is positively associated with a higher level of learning performance which increases the use of e-learning (Wu, Tennyson, & Hsia, 2010), an observation that has also been proven true by the findings of this study. This study has also proven that motivation, both internal and instrumental are strongly associated with effective adoption of e-testing environments; these findings here are resonant of prior research findings on attitudes towards and motivation for web-based assessment. This study also found that perceived self-efficacy, perceived system satisfaction, perceived usefulness and perceived enjoyment have direct positive effects to intention to use an LMS efficiently as they have direct positive effects on the intention and motivation to use web-based assessment technology for purposes of formative and summative evaluation – findings commensurate with prior research (Lee, 2010; Roca and Gagné, 2008). Thus, with the immediate feedback and instant scoring, the web-based assessment and practice not only plays the role of measurement or evaluation, but it also plays the role of instruction, reflection and reinforcement (Bransford, Brown, & Cocking, 1999). Students who take web-based assessment have opportunities to show their understanding; additionally, they can learn from their responses or mistakes to clarify, review, and reconfirm previous concepts, and finally integrate complex language concepts from the multiple practicing.

Web-based assessment and practice offered students multiple practice opportunities that eventually encouraged students to spend more time on tasks and attain higher levels of achievement. The feature of the randomized item generation provided by the web-based assessment system offered students multiple versions of each homework set. Students could practice as many versions or as many times as possible when it is necessary. Along with the immediate feedback and automated scoring, the automatic item generation encouraged students (a) who highly desire a perfect performance, having an opportunity to reach the maximum scores, and (b) who are not confident with their understanding, confirming and reconfirming the mathematical concepts and procedures.

However, the challenges facing both students and teachers and shaping their attitudes are vast and complicated, and affect them on a personal level. When applying a learning tool or system for learners, it is necessary to investigate both teachers' and learners' attitudes toward that tool or system. Essentially, understanding their perceptions toward learning environments is a crucial issue for enhancing teaching performance and learning effects. That is why their emotional reactions to the use of technology for teaching and learning should be seriously considered. English language teachers must always use a variety of tools to produce successful learning experiences and the computer is one of them. Technology cannot be sidelined and in this case, the computer and the Internet are resources to enhance teaching and testing, and promote the successful performance of students.

The results of this study confirm the assumption that instructors are willing to use e-learning environments to conduct assessment activities online. Findings from this study also provide evidence that instructors are highly inclined to apply eLearning technology to assess achievement and performance in their coursework online, believing that e-testing could be also a substantial teaching assistive tool. This is well associated with raising awareness to use technology in higher education learning.

It was also revealed that long-term retention of knowledge and skills related to technology use, content assimilation and preparedness to testing can be maintained in the long-term memory despite the criticism that drill-and-practice benefits are restricted only to short-term memory work (Carpenter & Lehrer, 1999), the reason being that students could be interested and more persistent to use online testing drill and practice for preparing for important tests. In addition, the study revealed also that when students engaged in the web-based assessment and practice, they were willing to spend more time on tasks to gain understanding and to strive for better achievement.

Furthermore, online assessment and e-test-taking practice, using drill-and-practice tutorials were found to enhance test-takers' confidence in doing their tests online much more than on paper-based tests. Additional information from the survey results also demonstrated that web-based assessment with features of immediate feedback, clear instruction, and instant scoring gave students better guidance to direct their learning.

In addition, web-based language assessment and practice enabled participants, who had some level of anxiety in learning a foreign language, to recognize their scores instantly through the Grade Centre; thus, they might have more control over their learning, and felt less anxious about doing math. It was apparent that the web-based multiple practices fostered students' self-assessment and self-regulation in which students could assess what they already know and what they need to improve, to make their knowledge base compatible with the learning goals. From this point of view, web-based assessment truly scaffolded students' learning processes.

The results of this study confirm that instructors are willing to use e-testing environments to convert to web-based assessment activities. The results also provide evidence that instructors have positive attitudes to apply e-testing technology in delivering formative and summative online, believing that e-testing technology could be an assistive learning tool that is complementary to e-learning. This attitude is well suited to raising awareness about the use of technology in higher-education learning. The findings of this study imply that enhancing faculty and learners' behaviours and attitudes is required for the success of future e-testing adoption, implementation and diffusion.

Implications

The findings from this study imply that creating web-based assessment technology awareness, motivation, and changing faculty and learners' behaviours and attitudes is required for the success of e-testing adoption, implementation and diffusion in the future. Since learners and teachers, too, are habituated to traditional teaching approaches (Miller et al., 2004) especially in developing countries where ICT is still in its infancy of adoption, some Saudi teachers' motivation and attitudes negatively affected by the students' reluctance to respond to e-testing activities on Blackboard, perhaps due to the intricacies of the system. These findings related to system design are commensurate with research findings from Lennon and Maurer (2003) which indicated that system design should be easy to use or else it will create confusion among users.

Furthermore, ongoing training on web-based assessment via LMSs is a necessity for new and veteran faculty as well as for students, too. Therefore, it is important to provide computer and Internet training to users to become familiar with e-testing technology and enhance users' skills and attitude towards technology. This is consistent with Lee (2008) who found that universities' providing computer support and training to learners strongly influence a learner's perceived ease of use and usefulness of the system. More research on the influence of web-based assessment and practice on students' performance should be conducted in different levels of pre-tertiary and tertiary education and at different grade levels to confirm the actual benefits of the online delivery system. In the future research, web-based assessment systems should be implemented for classroom assignments and practices, and should be assigned to students by their own teachers in addition to the traditional assessment over an entire academic year. The measurement of the language achievement and attitude should be the results of the long-term study across a diverse population of students with varied ages and educational backgrounds.

Technically, more web-based assessment tasks on various language drills and concepts should be designed. The database system should be constructed to manipulate a large-scale data collection, and to generate item pools for different language learning levels. An implementation of diagnostic systems for different language strands is also suggested to enrich the automatic feedback to teachers and educators.

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