E-assessment on the spotlight: present and future prospects

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Abstract: The role that technology has played in the educational domain is undeniable. In fact, it has affected various aspects of students' way of learning, not least their assessment. This change has been conducive to an online based-evaluation in line with the 21st century era referred to as e-assessment. The present paper is a review of the literature that first defines assessment and spotlights its types, features, and importance. Then, it moves to e-assessment by highlighting its emergence, tools, and process. It also sheds light on the differences that may exist between e-assessment and other more conventional modes of evaluation and the underlying reasons behind its use. Because the computer-based assessment is seen divergently from one scholar to another, the article discusses those disagreeing opinions in the form of pro and cons from pedagogical, social, administrative, and financial considerations. Moreover, it explores the set of challenges that can come across its implementation and provides a set of recommendations. The work intends to provide an in-depth understanding about such type of evaluation and insights for future e-designer, teachers, and researchers alike on the different parameters that have to be taken into account before designing any e-assessment task in an educational setting.

Keyword: Evaluation Method

Evaluación-e: presente y futura visión

Resumen: El papel que la tecnología ha desempeñado en el ámbito educativo es innegable. De hecho, ha afectado a varios aspectos de la forma de aprender de los estudiantes, sobre todo a su evaluación. Este cambio ha propiciado una evaluación en línea acorde con la era del siglo XXI, lo que se conoce como evaluación electrónica. El presente documento es una revisión de la literatura que primero define la evaluación y destaca sus tipos, características e importancia. Luego, se pasa a la evaluación electrónica destacando su surgimiento, herramientas y proceso. Asimismo, arroja luz sobre las diferencias que pueden existir entre la evaluación electrónica y otros modos de evaluación más convencionales y las razones subyacentes a su uso. Debido a que la evaluación electrónica se ve de manera divergente de un académico a otro, el artículo discute esas opiniones discrepantes en forma de pro y contra de consideraciones pedagógicas, sociales, administrativas y financieras. Además, explora el conjunto de desafíos que pueden surgir en su implementación y proporciona un conjunto de recomendaciones. El trabajo pretende proporcionar una comprensión en profundidad sobre este tipo de evaluación y una visión para futuros diseñadores, profesores e investigadores sobre los diferentes parámetros que deben tenerse en cuenta antes de diseñar cualquier tarea de evaluación electrónica en un entorno educativo.

Palabra clave: Método de evaluación

Introduction

Astin & Antonio (2012) define assessment as the range of activities that are employed by teachers and students as a means to assess one's competence, to score, or to accord a certificate. It covers a variety of materials such as tests, projects, reports, essays, portfolios, or standardised examinations. These authors argue that it aims at collecting data about learners' performance, linguistic capacities, as well as the activities of organisations and establishments, and making use of these data in order to lead to the improvement of the teaching/learning situation. In a similar line of thoughts, Sárosdy et al. (2006) advocate that it is utilised to judge students' learning and language development that result from what has been taught or to give them feedback prior to their actual examination sometimes without any scoring. Despite the potential that

assessment has in measuring students' performance and their learning achievement, it demands tremendous manual efforts for teachers. As a solution to this situation, institutions have started to encourage e-learning systems to conduct such assessment-related tasks (Usener et al., 2012; Cazan & Indreica, 2014). However, before shifting to e-assessment, the paper starts by providing the general principles underpinning assessment. This was deemed important so as to have a better understanding of the computer-based assessment.

Types of Assessment

Among the assessment types, Woolfolk et al. (2007) acknowledge two of them: the formative and the summative assessment.

Formative Assessment

According to Zhao (2013), formative assessment, which is also called assessment of learning, involves using strategies to ensure that students grasp the purposes behind learning and the criteria that will be used to evaluate their performances. He considers that its major goal is to judge students' level of performance on a specific task or at a certain period of teaching, thus supplying information for schools' reporting. He further adds that it enables comprehension of students' own learning and a provision of immediate descriptive feedback about their work. In his view, this pushes them to think about the way of improving their learning, and allows teachers to figure out learners' needs and make preparations for their teaching activities. On a similar line of thoughts, Stanković et al. (2017) defend that it is an in-process evaluation that assesses students' progress and understanding. These authors maintain that it is a source of data through which instructors spotlight the difficulties faced by their learners and make suitable changes so as to refine their teaching, and learners identify their lacks and improve their learning abilities.

Daly et al. (2010) suggest that it permits having insights on students' way of learning and the learning outcomes expected to be attained. For these authors, it as a constant reflection between teachers and students, students themselves, and students with other students. Nasab (2015) advocates that the gathered data from the assessment enhance both teaching and learning when they are being employed to call attention to what went wrong, what was effective, and what needs to be bettered or changed in one's teaching or learning. In sum, it could be said that formative assessment deals with the teaching itself for the following reasons: it identifies the strengths and deficiencies in students' learning (Hyland,2003), accompanies students while the learning is taking place (Stodberg, 2011), occurs all along with the lecture, and focuses on the quality of learning rather than the quantity (Crisp, 2011). In the opinion of JISC (2007), which stands for the Joint Information Systems Committee, it acts as continuous feedback of students' comprehension that does not grant any certifications or qualifications.

Summative Assessment

Unlike the formative assessment, the summative assessment seeks the measurement of the quantity of the students' knowledge once the instruction is finished as it is interested mainly in the learners' or the program's results (Hyland, 2003). Its purposes are to judge and measure what students have learned so far and grade them accordingly (Stodberg, 2011; Stanković et al.,2017), to hand a certificate (Crisp,2011), or to place students in specific fields or given classrooms (Rovai, 2000). Similarly, Shute & Rahimi (2016) view it to be the end product of what has been learned throughout the curriculum. They posit that type of evaluation is administered at the end of the academic year or

schooling for the goal of giving grades, performing high-stake examinations, or being awarded an attestation. They see it as a source of comparison of learners' performance on a large scale that evaluates the degree to which the educational objectives are met or not. For this sake, Ridgway et al. (2004) state that it is taken more seriously by students than the formative assessment because of its deep consequences on their future careers. Indeed, the obtained certificate from the high-stakes examinations opens access to tertiary education and ranks students according to their performances. Henceforth, it is not centred towards learners per se. A considerable audience is involved in it including teachers, parents, schools, institutions, policymakers, and other administrative staff which are commonly named stakeholders (Ridgway et al., 2004). This point joins the one of Shute & Rahimi (2016) as for the wide implications of summative assessment that can move beyond the school infrastructure so as to reach a national level and policymaker decisions.

Features of Assessment

Benmostefa (2014) speaks about three key features of assessment which are: practicality, reliability, and validity. This author stipulates that practicality encompasses the affordability of the test in terms of financial means; the facility of administration, completion, correction, scoring, and interpretation; and the suitability of the level of difficulty. For her, reliability entails the similarity of the test results if it is to be repeated under the same testing conditions. As regards to validity, she states that it indicates the match of the content of the test with the purpose behind testing. She highlights that validity embodies diverse types; yet, according to her, the most utilised ones are content, construct, face, and empirical validity. She posits that content validly implies the accordance of test content with the skill which is measured. While she links construct validity with the degree to which the test corresponds to the language theory that the test designer is interested in, she suggests that face validity is a matter of learners' accustomedness with every aspect of the test in relation to the provided vocabulary or type of activities. She further upholds that a test that deems to have an empirical validity is a test which has been compared by other tests that are accredited to be valid.

Importance of Assessment

Assessment plays a crucial higher education (Appiah & Tonder, 2018). Blackà (2003) maintains that the set of information obtained from it represents feedback that changes the teaching practices and learning outcomes, and thus, leads to the betterment of learning. JISC (2007) asserts that it leads to the well-being of institutions and learners by encouraging them to work harder in their respective fields of study and develop their skills over time. Nasab (2015) discusses its role with regard to the involvement of learners in the learning process and its ability to constantly motivate them to work harder. From the standpoint of Zhao (2013), it goes hand in hand with teaching. He believes that it serves as a meaningful source of information for instructors that permits them to know the quality of their teaching, to evaluate the extent of understanding of learners, to determine if the curriculum objectives have been met or not, and to identify the important elements that have to be learned. This author has not only restricted this role only to the teachers, he advocates that learners have also their fair chair as it informs them about their learning outcomes. For this sake, Crisp (2011) declares that teachers should take the necessary time to design an assessment that is intrinsically valuable for them and their learners. It should have long term educational goals that would have implications on the society as a whole, as well as a proper design that would signal students' performance (Ridgway et al.,2004). Henceforth, an appropriate assessment is an indicator of the success of teaching and learning (JISC, 2007). The technological enhancement that has been witnessed in today's world has taken on new perspectives

towards assessment (Jordan, 2013) that have diversified its formats and tools and led to a technology-based called e-assessment (Mojarrad et al., 2014).

E-assessment

Jamil et al. (2012), Al-Qdah & Ababneh (2017), Jordan (2013), Bukie (2014), Timmis et al. (2016), and Kuzmina (2010) mention that the computer-based assessment, computer-based testing, computer-aided assessment, computer-assisted assessment, computer-assisted testing, computer-administered testing, technology-enhanced assessment, technology-enabled assessment, computerised assessment, computerised testing, web-based assessment, e-examination, e-testing, and online assessment, are the set of terms that are generally considered being synonyms of e-assessment within the literature. JISC (2007), which is e-assessment guidance developed for the United Kingdom countries, as well as Kuzmina (2010), and Mimirinis (2019), define e-assessment as a type of electronic evaluation that relies on the computer or any other technological devices in order to conduct all the process of the assessment, moving from the presentation of the assignments, till the recording of students' answers for summative or formative objectives (Timmis et al., 2016). In line with this statement, Kuzmina (2010:1) advocates that it: "enables educators and trainers to author, schedule, deliver, and report on surveys, quizzes, tests, and exams".

Crisp (2011) puts forward a more detailed explanation and claims that in this ICT (Information and Communication Technology)-based evaluation, students' assignments, answers, scores, and feedback are elaborated, distributed, recorded, corrected, analysed; stored via digital devices that can be computers, mobile phones, tablets, or gaming tools, and presented in various layouts such as texts, documents, sounds, pictures, videos, or games. This author also mentions the individual and collective attributes as well as synchronous and asynchronous aspects of e-assessment. Jordan (2013) holds that it is employed to perform an online quiz that can be either automatically computer-marked or human marked, to submit an assignment online, to assess an e-portfolio or a blog, and to give audio feedback which can be recorded by the computer. Simply put, e-assessment is an evaluation in which the computer plays an essential component of the assessment as it is the means upon which assessment-related tasks are being achieved (Jamil et al., 2012).

Emergence

Al-Smadi & Guetl (2008) state that this practice is not as recent as it may sound. Indeed, it dates back to the early 1960s and 1970s, a period during which the first computer programs began to be developed. Then in the 1980s was the emergence of the micro-computer for teaching and designing online tests. However, the most prominent creation that revolutionised the computer-based evaluation was that of the World Wide Web (WWW) during the 1990s. Since then, sophisticated web-based assessment systems came to light for both the automatic grading of fixed responses (predictable responses with a pre-determined list of alternatives as it is the case of multiple-choice questions and matching activities) and the evaluation of free responses and (non-predictable and non-predetermined answers as in essay writing).

Tools

As part of the tools that enable the design, administration, collection, and correction of those activities, Bukie (2014) cites the e-portfolio which he claims to be a sort of proof of students' learning development throughout time, the blog that he sees to be a virtual journal in which students regularly upload their thoughts, and students' reports. This

latter can be downloaded, graded, and distributed to learners online. In a similar vein, Crisp (2011) mentions:

- Closed-ended questions in the form of filling in the gaps, answering multiple-choice questions (MCQ), selecting one answer from a list, ordering answers which are automatically graded or writing a short or extended answer.
- E-portfolio (a collection of students' works online in a digital format).
- Wikis (online project work).
- Discussions in a forum within a group of participants.
- Social media sites.
- Self or peer assessment through which each person assesses individually one's work or another person's work.
- Blogs where students reflect on a given task and make decisions
- Simulation via interactive applications
- Virtual world scenario where individuals are immersed in a 3D environment in which they create avatars, and start role-playing a given character and are engaged in problem-solving situations
- Learning Management Systems (LMS) like Blackboard, Sakai, and Moodle

Process

As shown in Figure 1, Whitelock et al. (2006:184) elaborated an e-assessment cycle that describes its processes or them, motivation is the starting point of an e-assessment task. The upcoming step implies the design and elaboration of the assessment. It is then followed by the testing of the students and the distribution of their submissions. After that comes the data processing and the provision of feedback to the students. Finally, the cycle ends with the evaluation of the outcomes by the students who are going to review the feedback.

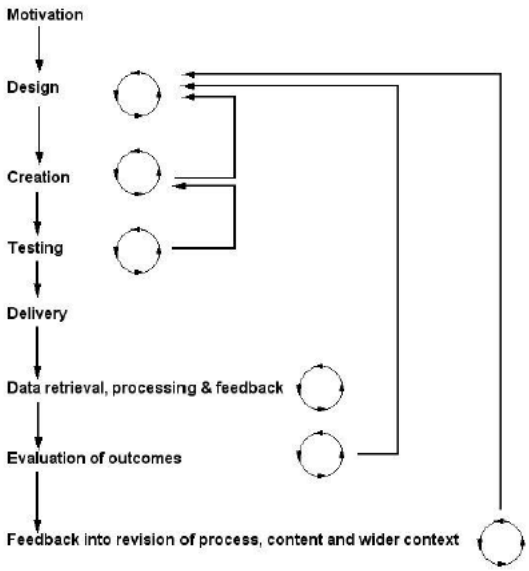

Figure 1. E-Assessment Cycle (Whitelock et al., 2006:184)

One can notice that the e-assessment process quite resembles an ordinary assessment.

Though e-assessment is sometimes seen to be only a copy of the paper-and-pencil assessment (Al-Smadi & Guetl, 2008) because of the resemblance of the types of

activities in both evaluation modes, the computer-based ones have broader implications (Simin & Heidari, 2013). Thus, a clear-cut distinction should be made between the two.

Difference between Traditional Assessment and E-assessment

Alruwais et al. (2018), Jordan (2013), Cazan & Indreica (2014), Kuzmina (2010), and Timmis (2016) agree on the belief that the use of certain e-assessment tools such as software, virtual games, web-based tools, or audio-visual aids like 3D animated diagrams or multi-angle figures for assessment, has the capacity of generating novel forms of learning that may not occur in a traditional context. This point supports what JISC (2007) stipulate on the potential that e-assessment has to evaluate learning areas that used to be inconceivable in conventional methods. It is, thus, more interactive and entertaining (Simin & Heidari, 2013). Additionally, Alruwais et al. (2018) give prominence to the facility of the online tests of being adaptive, a facility that is absent in the traditional assessment.

On the reverse of a traditional paper-and-pencil assessment which is effort demanding (Usener et al., 2012) and time-consuming to assess students' papers and give back the scores, the computer-based assessment is much easier to use (Alruwais et al., 2018) and rapidly analyses, corrects, and stores the papers and scores (Kuzmina, 2010). Moreover, it has an unlimited capacity to handle large data in contrast to the human's which is more or less limited (Kuzmina, 2010). Furthermore, the results of the computer-based evaluation are seen to have increased accuracy and reliability in comparison with the ones of the traditional assessment (Al-Qdah, & Ababneh, 2017; Jamil et al., 2012). Adding to this, the duration of the test in a computer-based setting is not as strict as it is the case in a conventional assessment. There is neither the pressure of time, which can be exceeded at students' convenience nor the pressure of the teachers who invigilate and stress the learner to return back the copy. This invigilation can even be withdrawn in an e-assessment environment (Simin, & Heidari, 2013).

According to Al-Smadi & Guetl (2008), the rationale behind its adoption over the traditional evaluation lies in two aspects: practical and pedagogical. Practical in the sense that it is an efficient solution to the increased number of students and the enduring time reserved for their assessment. From a pedagogical standpoint, however, it is seen to adequately meet the principles that guide an assessment activity in relation to validity, reliability, efficiency, and diagnosticity. Similarly, Appiah & Tonder (2018) mention the burden that instructors encounter as for the correction of students' answers and the storage of their marks. They believe that the considerable augmentation of learners lately has rendered the management of such tasks daunting for them. Ridgway et al. (2004) also discuss these management and storage difficulties, especially when dealing with large scale data.

In the view of Alruwais et al. (2018), the rapid and accurate features of the computer-based assessment in comparison with the conventional one are the rationales for its embracement by most of the universities nowadays. Crisp (2011) and Jordan (2013) relate this to the limitations of the ancient methods of assessment such as the insufficiency of direct feedback and students' involvement which have rendered learners restricted only to the task. Additionally, Timmis et al. (2016) and Pearse-Romera y Ruiz-Cecilia (2019) speak about the unsuitability of the traditional methods and their overemphasis on grades and assessment procedure, and their lack of creativity, in this way decreasing learners' self-confidence as well as motivation. Yet, these authors do not deny their potential; they just argue that combining technology along with assessment has brought about new skills in the society based on online collaboration, exchange, interaction, and peer assessment. The embracement of these skills is important in order to cope with this changing world. Consequently, e-assessment has

come to light as a possible solution to these long-existing problems (Appiah & Tonder, 2018).

Advantages of E-assessment

Crisp (2011) upholds that e-assessment is not a mere change of administration delivery or provision of multiple-choice questions as what many people may think. In fact, it has rather wider implications that go beyond what is tested for teachers, learners, and intuitions in higher education. In effect, it offers endless capabilities for improvement as it relies on a variety of skills that encourage learning in its diverse angles and in a deeper and more authentic way (Crisp, 2011). Among other advantages accredited to e-assessment is that is supplies an objective and fair grading (Whitelock & Watt, 2008; Al-Smadi and Guetl's, 2008), as well as a reliable and valid assessment that encourages social skills and high order cognitive abilities like reflection and thinking (Jordan, 2013; Alruwais et al., 2018; Al-Smadi & Guetl's, 2008; Buzzetto-More & Alade, 2006).

Appiah & Tonder (2018) and Alruwais et al. (2018) speak about the adaptability and flexibility of e-assessment. For Alruwais et al. (2018,) they happen, for instance, by manipulating the level of difficulty based on students' answers i.e., the more the answers are correct, the more the difficulty increases and vice versa. While in the opinion of Appiah & Tonder (2018), they are a purely teachers' decision. These authors declare that such evaluation gives them the opportunity to either assess basic and easy elements in the form of closed-ended questions which often lead to a mere recalling of information, or to make use of the numerous e-assessment tools such as wikis, blogs, simulation, self and peer review, simulation, and role-play for the sake of assessing high order cognitive skills that require analysis and evaluation. In sum, these decisions lie at their hands and the objectives that they intend to reach by the end of the evaluation (Appiah & Tonder, 2018). For this reason, Al-Smadi & Guetl (2008) stipulate that an appropriately designed e-assessment can become challenging for learners. It should be noted that it is not restricted to the content only, but also in the assessment's delivery because of the diversity of the question types (Crisp,2011).

Plus, it renders the administration, collection, and marking of the assessment and the communication of the results much easier and quicker (Koneru, 2017; Simin & Heidari, 2013) saving by that teachers' time and efforts and making the hardcopy needless (Koneru, 2017), especially when dealing with large classrooms (Jordan, 2013). Besides, it facilitates the storage of students' answers and grades (Crisp,2011) which will be used by the teaching staff to track the progress of the learners who, in return, assess their own learning development **(**Simin & Heidari, 2013). As a result, they gain a sort of control over the assessment that allows them to be involved and responsible in their learning while following their own pace (Jordan,2013; Alruwais et al., 2018; Prakash & Saini, 2012). In addition to that, it gives the opportunity to their instructors to provide immediate (Kuzmina,2010), insightful, and detailed feedback of learners' answers, especially when the assessment is associated with a formative assessment (Crisp, 2011), that highlight differences among learners (Alruwais et al., 2018). As a result, they become only guiders of their learning and their interaction with them is bettered (Buzzetto-More & Alade, 2006; Shojaei, & Fatemi, 2016).

The fact that e-assessment creates a judgment-free environment that lets learners make mistakes freely in private (Jordan, 2013); permits to perform the test whenever it suits them (Ridgway et al., 2004); even to reattempt it at their convenience; and have easy access to the resources (crisp, 2011), encourages practice and, thus, improvement **(**Simin & Heidari, 2013). Consequently, it can lead to a complete rethinking of the curriculum and development of new educational goals and objectives that stress on the

necessary elements that need to be learned (Ridgway et al., 2004; Buzzetto-More & Alade, 2006), take learning needs into account, timely examine students' assignments, and boost formative assessment and diagnosis (Koneru, 2017; Al-Smadi & Guetl, 2008).

Crisp (2011) reports that e-assessment supplies real-world experiences with complex problem-solving situations through simulation. This virtual contextualisation proposes novel perspectives of assessing certain skills that may not be assessed by other means (Jordan, 2013) conducive to an authentic assessment (Ridgway et al., 2004) and enduring learning (JISC, 2007). On a similar thought, Timmis et al. (2016) point out that the various e-assessment tools increase learners' decision-making, thus preparing them for managing problems that they may encounter in the future within the societal life. Moreover, it supports distance learning by creating a personalised and flexible evaluation that fits students who may face some constraints, be them personal or professional, and is at their convenience in terms of time and place (JISC,2007; Timmis, 2016). Furthermore, it is more appropriate for disabled learners to whom a paper and pencil evaluation would be difficult (JISC, 2007; Kuzmina, 2010) as there is a possibility to design audio-recorded assessment that they can listen to and visual tools through which they can modify the size according to their needs (Appiah & Tonder, 2018). Also, it boosts students to peer assess one another and work collaboratively (Prakash & Saini, 2012; Koneru, 2017; Jordan,2013; Alruwais et al., 2018), and opens to door for self-assessment as well (Crisp,2011).

Furthermore, it is cost-effective in the long term (Ridgway et al., 2004) in relation to the design in the sense that the test can be updated and modified without any expenses **(**Simin & Heidari, 2013) which eradicates the costly printing of papers (Appiah & Tonder, 2018). It is also preventive of human errors and user-friendly i.e., easy to use (Kuzmina, 2010). Summarising all what have been said, Prakash & Saini (2012) hold that e-assessment is a flexible tool and learner-centred, enables the accessibility of the resources, opens the room to learners to compare their performance with other peers, encourages exchange and communication, and actively involves them in the learning process.

Disadvantages of E-assessment

Among the criticism addressed to e-assessment is the fact that it fails to assess high cognitive reflective abilities such as critical thinking. Instead, it measures students' memory and surface knowledge since it is generally associated in the literature with closed-ended questions (Usener et al., 2012; Prakash & Saini, 2012; JISC, 2007). These types of questions are, as reported by Simin and Heidari (2013), commonly used by teachers in e-assessment related tasks and tend to decrease students' motivation. These points of view do not go along with the ones of Jordan (2013), Alruwais et al. (2018), Al-Smadi & Guetl (2008), and Buzzetto-More & Alade (2006) who point out the opposite. Contradicting Koneru (2017) and Kuzmina (2010), Cazan & Indreica (2014) and Simin & Heidari (2013) maintain that e-assessment is time-consuming. While Cazan & Indreica (2014) relate this constraint with its implementation and the design of tasks that assess high order skills, Simin & Heidari (2013) link this with its difficulty of use particularly for learners in non-technical disciplines and for instructors who need certain knowledge about ICTs. Indeed, e-assessment requires students to be digital literate (Mojarrad et al., 2014) and trained in this regard (Simin, & Heidari, 2013); otherwise, the online test will be a failure (Kuzmina, 2010).

Though Simin & Heidari (2013) highlight the economic advantage of the design of e-tests with reference mainly to MCQs (Multiple Choice Questions), they acknowledge that it is its implementation at the level of institutions, especially with more sophisticated hardware

and software tools, which costs. Kuzmina (2010) mentions other logistic difficulties related to the implementation such as the inability to provide individual computers for each student particularly when the assessment is based on a large scale. For this reason, Stodberg (2011) affirms that it demands a lot of effort and investment from the part of authorities for the sake of being widely spread. Simin & Heidari (2013) call into question some integrity and credibility concerns that may arise from such evaluation. They state that it increases cheating and plagiarism among learners during the examination especially when it is not supervised. They also discuss the security risks as for the difficulty of verifying learners' identities. Plus, they maintain that the non-robustness of certain e-assessment software can lead to the complete failure of the task or examination.

In addition to that, there is a lack of attention from students during the assignment. Prakash & Saini (2012) declare that the e-designer has to make sure that the students stay focused during the e-activity and do not deviate from it. This lack of attention occurs mostly in wikis where students start chatting and forgetting the aim of the activity. As far as the social interactions generated by the e-assessment tools are concerned, Timmis et al. (2016) uphold that they sometimes lead to isolation or what they called 'social exclusion' within web-based tools and social networking sites. Moreover, Cazan & Indreica (2014) stipulate that it creates computer anxiety for learners and instructors, who do not master computers, which is represented by hesitation and resistance towards its use.

Challenges of Implementing E-assessment

The numerous criticisms forwarded to e-assessment may lie in the challenges of implementing it in higher education that a variety of scholars believe are a hindrance to its success. In this light, having students and teachers not mastering ICTs, dealing with poor countries that lack materials and technical infrastructures, or having issues handling group works, are the challengers discussed by Alruwaisi et al. (2018) and Simin & Heidari (2013). Following their ideas, JISC (2007) declares that the difficulties behind e-assessment practices are caused by technical and financial supports. In the same line of thoughts, Whitelock & Watt (2008) advocate other pitfalls that may be an issue when using e-assessment which are: problems of plagiarism detection, invigilation, user's identity, and training. Though JISC (2007) and Crisp (2011) highlight the easy accessibility of e-assessment in terms of place and time is one of the advantages of e-assessment, Appiah & van Tonder (2018) suggests that it is one of the reasons that prevent institutions to use if for high-stake examination due to security concerns which represent another challenge of e-assessment.

Opponents of e-assessment defend it by mentioning its set of features which can overcome some of the above-cited challenges. As far as security problems are concerned, Alruwaisi et al. (2018) disclose that it gives the possibility to check students' identities by passwords, fingerprints, facial recognition tools, or certain inserted cards. As regard to cheating, they posit that it has the ability to reorder the questions of the test. This may lead learners to think that the test is different and will stop them to copy from their peers. This last point juxtaposes the claim of Mojarrad et al. (2014) as for the randomisation of the questions of the test. Besides, James (2016) cites the block browser that is included in some LMS and which forbids learners to use the internet during the test as well as webcams that verify students' identities before the test takes place.

Recommendations

JISC (2007) and Simin & Heidari (2013) consider that e-assessment practices should be the result of training as well as the providence of technical guidance, infrastructures, materials, and qualified staff and specialists. Simin & Heidari (2013) suggest that there should be a thorough organisation and collaboration between all the people concerned by the e-assessment moving from teachers up to the administration in order to guarantee its good flow. Whitelock & Watt (2008) propose that there should be a pedagogical e-assessment model so that to boost students' autonomous learning and critical thinking. The model would imply the elaboration of feedback that would have an intrinsic value, push learners to self-assess themselves. This feedback would be used by students to be self-dependent and enhance their learning, and by teachers to improve their teaching practices. Adding to this, Prakash and Saini (2012) point out that the e-designer has to bear in mind of the following elements when elaborating an e-assessment task: the required time to submit the activities, the time spent during the performance, the number of students' attempts, the expected outcomes, the online materials, and the fairness of the activities. Ridgway et al. (2004) further continue by highlighting the content of the assignment, the timing of delivery, and the way of implementing it. While JISC (2007) stipulates that the appropriate choice of the activity and its pedagogical direction are its principle attributes.

Conclusion

One can conclude from the present paper that e-assessment is an umbrella term that covers diverse digital activities with array assessment possibilities. It englobes all the assessment process which is made electronically and relies on various electronic tools that enlarge learning. The fairness, efficiency, validity, the reliability, flexibility, diversity, and authenticity of the assessment; the immediacy of feedback, the accessibility and the availability of resources; and the involvement and collaboration of the students, are the core features accredited to e-assessment that the majority of scholars agree on. Other researchers have criticised it on many grounds like technical difficulty related to the insufficiency of technological knowledge from the part of instructors or learners, cheating problems, or financial issues. Despite this, the number of scholars in the literature promoting its advantages outweigh them. The work has also outlined the points of divergence between the traditional and the online evaluation as far as capacities, and limitations are concerned. In the end, the paper has advocated a number of challenges that can come across the design and implementation of e-assessment and the set of recommendations and considerations that have to be borne in mind by the e-designer. In sum, it could be said that training, technical guidance, qualified specialists, adequate infrastructures and materials are the key elements that guarantee a good e-assessment practice.

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