Digital Assessment Literacy — the Core Role of the Teacher in a Digital Environment

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ABSTRACT

One of the main functions of a teacher in a digital environment is student assessment. The need for assessment literacy based on measurement and quantitative data is weakening, both in terms of the traditional approach of the assessment on which it is based on, and given that information technologies can address these needs effectively. The assessment literacy required of a teacher today is of a completely different kind — one that is adapted to the digital environment and tailored for the pedagogical approaches of the 21st century. This article will focus on the skills, abilities, and perceptions required of the teacher in the digital environment with respect to assessment, and will demonstrate the importance of adapting the various technologies to the different assessment purposes. This definition of the term "Digital assessment literacy" is based on a doctoral thesis that examined the Relationship between the technological environment and the teaching, learning and assessment processes in online courses (Eyal, 2010).

Keywords

Literacy, Digital assessment literacy, Teacher role, Digital environment

Literacy and assessment literacy

The term "literacy" has diverse interpretations (Wagner & Kozma, 2003). Common to all is a view of the level of literacy as a measure of the quality of human capital of a society or a particular area. Literacy develops in interaction with the environment (Vygotsky, 1987). I will argue that the environment is not only the human environment, but also the digital environment. In recent years, the term "assessment literacy" appears in the literature in two senses: One sense refers to the collection of the teacher's skills in test development, the composition of closed questions, the development of assessment rubrics, and statistical analysis of cumulative data for variety of teaching and learning needs (Donoho, 2000; Popham, 2004). In an article published by Popham (2004), the lack of assessment literacy was presented as "professional suicide". Popham claimed that experts' achievements in various fields are measured based on external measures forced upon them. Teachers are also measured by their students' performances in tests, but surprisingly, they usually ignore this indicator as a measure of the quality of their instruction. This same assessment literacy, discussed by Popham, is the ability of the teacher to significantly delve into and interpret the test results. Alternatively, Stiggins (2002) defined an "assessment literate teacher," as one who knows what assessment methods to use to collect information on the students' achievements, conducts a dialogue about effective assessment results, using the ranking scores, reports, and portfolio, and understands how to use assessment to increase the motivation of learners and include them in the learning process. However, neither definition addresses the abundance of opportunities that the digital environment provides and the variety of skills required of a teacher and of learners to act in such an environment (Eshet-Alkalai, 2004).

In this article I argue that: (a) the teachers need for assessment literacy based on quantitative data measurement is disappearing, partly because it is based on traditional approaches of evaluation and because today's advanced technological tools fully support teacher's work; (b) teachers must have assessment literacy, but for an entirely different kind of assessment—one that incorporates the skills mentioned in the definition given by Stiggins (2002) and tailors them to the digital environment; and (c) as part of the teachers' role as evaluators in the 21st century, they should also know when to relinquish this responsibility to the students, in order to develop self-regulated and reflective learners.

This article seeks to highlight a different aspect of assessment literacy—*digital assessment literacy*. This term has not yet appeared in the academic literature, and refers to the role of the teacher as an assessor in a technology-rich environment.

Learning Management Systems (LMS) benefits and limitations

Monitoring students' learning progress has always been required as part of any teaching and learning approach. "Assessment" is a term that includes various methods and ways of gathering information on the nature of the learners' performance—the learning process and progress in studies (Birnbaum, 2000; Schank, 2001). Effective assessment includes both systematic and non-systematic collection of any of information that may contribute to understanding the learners' place in terms of knowledge acquisition. The process involves analyzing and interpreting the information, as well as making judgments based on that interpretation.

As analysis, interpretation and judgment are processes that may be affected by external and subjective factors; some suggest the use of measurement. Measurement allows quantitative description of a particular characterization of an individual, expressed in numbers. Some argue that the combination of assessment and measurement provides a thorough and accurate picture, based upon which practical conclusions can be drawn (Wagner, 1997). A test is a systematic process in which an aspect of student behavior is quantitatively evaluated (Suen & Parkes, 2002). For several decades this system of assessment has been criticized for a variety of reasons, including the separation between the teaching-learning process and the evaluation process, the relatively low level of thinking required, and the quantitative reporting of results, which does not contribute to students' progress. In the last decade, the central argument against the tests system is that their predictability is limited to the field and context in which the students are tested, and that they do not predict student problem solving ability, teamwork, good work habits and honesty.

However, this is still the most common way of measuring the achievements of learners in education. In the last decade, the introduction of learning management systems (LMS) has helped streamline the testing assessment process. An LMS allows teachers to develop assessment items (in this case, a test), assign them to students, receive their computerized answers, and edit different segments (e.g., all students' answers to question X) to help identify specific weaknesses in students and manage feedback. In other words, the system may provide teachers with tools for efficient management of the evaluation process as whole, including the management and organization involved in carrying out tests (Paulsen & Keegan, 2002; Hall, 2001; Greenberg, 2002; Liu, El Saddik & Georganas, 2003; Wang et al., 2004). Familiarity with Learning Management Systems is a basic level of Digital Assessment Literacy needed by teachers in the 21st century.

Concentration of assessment data and cumulative documentation in computerized systems benefits all parties involved in the educational processes. First, the learners benefit because they have information about their scores, their implementation of tasks on time and their attendance records, as well as an overall picture of their learning situation relative to other students. The teachers benefit because it is possible to address a variety of learning styles and levels, and strengthen the personal connection between teachers and learners, thanks to the potential for ongoing dialogue and personal feedback (Eyal, 2010). Principals may also use the digitally displayed assessment data; they can receive a general profile of a single student or class profiles at different levels of comparison. Furthermore, parents' access to data on their child's achievements makes them aware of vulnerable points where improvement is required and encourages parental involvement on a personal level.

Many teachers mistakenly believe that repeating lessons will improve students' achievements. But, in fact, computerized documentation of assessment data is an ideal means for learning. Use of the documentation is immediate and can provide a complete and comprehensive picture of performance as a basis for planning and improvement. Collection is easy and fast, the information is available, simple and efficient, and do not take up teaching time or interfere with the class. Computerized documentation of collection data enables precise assessment, reflection, and feedback. It helps in remembering activities and events, allowing reuse over time. Computerization of tests streams the data into the system and teachers have only to decide how and when to use the data, and most importantly, to perform any required intervention in a timely manner (Globman & Kula, 2005; Dede et al., 2002; Smith, 2006). Smith (2006, p. 1) quoted Tim Wagner, Director of Educational Technology, the U.S. Department of Education of education technologies of U.S.: "These systems often allow them to analyze data in real time, so they can solve problems as soon as they arise." In other words, an LMS also can be used as a diagnostic tool that strengthens the capabilities of assessment on the one hand, and learning on the other (He & Tymms, 2005). It is important to emphasize that information systems do not replace the teachers' role in providing grades, composing knowledge questions, and deciding who needs help; these roles are still performed by teachers, with the benefit of the information provided by an LMS. A study that examined the use of LMS in large classes (Eyal, 2010) found that the load on the teachers was reduced owing to teachers' efficient use of the system, allowing them additional time for

planning, developing and updating custom assessment items, reviewing and monitoring performance of students, giving detailed personal feedback, and searching for additional sources of information.

There are several secondary benefits to the use of an LMS: The teacher is the primary "evaluation authority." He is usually the measurement tools designer; he evaluates and draws conclusion based on the results. Typically, he performs all these actions alone. The use of computerized tests can work to the mutual benefit of a team of teachers who can build a bank of assessment items from which different tests can be assembled each time, according to the unique needs of each student or group (Bennett, 2001). The shared work effort lightens the teachers' workload, and enables the data to be saved and easily retrieved whenever needed, and over time. In addition, an LMS enables the tracking of learning behavior (Mor, Minguillon & Carbo, 2006). Most such systems incorporate mechanisms for documenting information about students, such as how frequently they log onto the course site, the history of visits, number of posts, length of stay, and so on. Data Mining draws a rich picture of the learner, which can be used according to the learning patterns and needs of each learner (Fichter, 2003).

One of the criticisms of multiple-choice tests is that they are based on constructed problems with algorithmic solutions that encourage intentional learning of correct answers instead of higher-order thinking, which reduces the scope of the evaluation (Bennet, 1993; Osterlind, 1998; Resnick & Resnick, 1992). However, computerized assessment items may include graphics, sound, animation, and multimedia with response options at different levels. Scalise and Gifford (2006) offer a taxonomy of computer-based questions and tasks, organized into seven categories of computerized interactive questions from a series of multiple-choice questions (selection, prioritization, completion) to questions that require the examinee to complete knowledge construction and interpretive level response. The media may create response scenarios that cannot be perceived when taking a paper and pencil test, for example, clicking on an area where an image is displayed graphically (chart or map), interactions that play sounds, or analysis of animations or clips (Eyal, 2010; Parshall et al., 2002).

The risks of using tests also should be taken into consideration, for example, security issues. In practice, it is not always possible to monitor the tests taken by students at home. We cannot ask them where they have placed their study materials, nor is it feasible to ask them not to be in contact with their classmates during the exam (Suen & Parkes, 2002; Petty, Johnston & Shafer, 2004). Beyond the security constraints and technological points of failure, there are also pedagogical risks (Beichner, 2006; Hamilton, Klein & Lorie, 2000). Instead of serving as a catalyst for the integration of new pedagogy, based on social constructivist approaches (Vygotsky, 1978), the ease of use and time saving nature of technology sometimes tempts teachers to overuse them. Additional risks may be overuse of multiple-choice questions as a primary means of assessment or abandonment of aspects of self-learning, due to dependence on the teacher and insufficient collaborative learning, or due to the inability to see their colleagues' products (Eyal, 2010).

Constructivist & creative use of traditional tools

Let's take the use of computerized tests a few more steps forward. Interactive technologies provide rich sources, extending the learning environment and opening up a world of possibilities in planning instruction and assessment (Comeaux, 2005). If used creatively, multiple-choice tests can promote constructivist learning (Scalise & Gifford, 2006). For example, they may be useful for self-diagnosis of the learner's abilities in various fields, research, diagnostic assessment of learners for the design of complex pedagogical processes, practice, and feedback (Eyal, 2010). Such advanced and creative use of the LMS indicates the teacher has a higher level of Digital Assessment Literacy, reflected in the integration of new pedagogical concepts regarding assessment together with technological tools.

Until now we have analyzed the potential of computerized documentation and organization of assessment and behavioral data. From the traditional perspective, the teacher sets the criteria for evaluation, plans assignments for students, collects information about the learning, and uses it to improve learning outcomes and plan future instruction. This is the most common approach to teaching and assessment, which is used for the purpose of teaching basic skills. To evaluate how well the goals were achieved, objective measurement methods are employed (Black, et al., 2004). Sometimes, the added value of learning is measured in order to guide the learner. The teacher checks the degree of content mastery: (a) concepts, principles, and prior knowledge; (b) mastery of procedural knowledge (following instructions, operating appliances, basic thinking skills, and knowledge of sources and how to access them); (c) control of expression; (d) handling of maps, graphs; and more. The teacher must provide opportunities for

practice and repetition with feedback, demonstrations, practice of skills to mastery, observation and emulation of activities, and sorting and memory tasks (Birnbaum, 2000; Globman & Kula, 2005). The teacher's role as an assessor in these teaching activities is dominant. Computerization of these processes is highly efficient, and the teacher needs to recognize the range of potential options in this area and make skillful use of them. Digital assessment literate teachers also should be aware of the technological, pedagogical, and ethical limitations, and make decisions regarding activities accordingly.

Advanced assessment methods in a digital environment

Learning methods in a 21st century digital environment, such as self-directed learning, collaborative learning (Garrison & Anderson, 2003), place the learner and the community at the center of the learning process, while recognizing the differences between learners, with the rate of learning adapted to the individual and his abilities, preferences and needs. Learning in a digital environment develops the learners' writing and overall expression skills, and enables high-level discussions, exposure to rich and up-to-date materials, as well as immediate feedback (Bonk, et al., 2000). In addition, this learning method makes it possible to equip students with the cognitive skills necessary for the information age, and skills that are vital for coping with the vast quantities of information, for example: problem solving, critical thinking, creativity, self-learning strategies, meta-cognition, reflective thinking, social discussion skills, team work, and personal skills, such as persistence, curiosity and initiative (Passig, 2000). Eshet-Alkalai (2004) offered a detailed conceptual framework for the term 'digital literacy' that includes: photo-visual thinking; reproduction thinking; branching thinking; information thinking; and socio-emotional thinking.

Unique characteristics of the digital learning environment require appropriate assessment (Liang & Creasy, 2004; Petty, Johnston & Shafer, 2004), or the result is a paradox. Salomon (2000) called this an "evaluation paradox": If all components of the environment (pedagogy) remain unchanged, then the computer-assisted learning outcomes will be insignificant. By a similar argument, according to researchers and educators, the best way to evaluate the digital learning environment is by focusing more on the learning process the products and less on the use of tests (Huba & Freed, 1999; Petty, Johnston & Shafer, 2004). It can be maintained that when it comes to the advancement of learning and thinking and the improvement of teaching, there is consensus among the researchers regarding the centrality of assessment in general and formative assessment in particular (Black & Wiliam, 1998; Shepard, 2000). For this reason, the application of alternative assessment methods is recommended in addition to traditional methods (preferably in place) in order to produce rich evaluative information on students and a more comprehensive picture of their achievements (Birnbaum, 2000). Evaluation culture that emphasizes assessment as part of the instruction-learning process provides nourishment and guidance, as well as evidence of students' thinking, learning abilities, and master of materials. This is a formative evaluation, also known as assessment for learning. This is the process of searching for evidence used by learners and teachers to determine students' progress in their studies, and set objectives and how to best accomplish them (Assessment Reform Group, 2002). According to this approach, teachers determines the objectives, designs the tasks and determines criteria for assessing performance, evaluates the students, and produces constructive feedback that clarifies the strengths and how they can be developed, as well as the points that require strengthening (Birnbaum, 1997). The importance of learning increases when students participate in the entire process.

Alternative assessment methods in a digital environment offer students a rich variety of learning methods that enable them to exhibit higher levels of thinking. They are able to present more complex knowledge in the context of everyday life and develop a deeper dialogue about the learning content (Comeaux, 2005). Technology enhances the teaching and assessment capabilities, and creates opportunities for improvement and diversification in the evaluation of learners, including addressing written communication skills, cooperation, teamwork, and reflective thinking (Eyal, 2010; Liang & Crazy, 2004). In addition, digital environments can provide a solution for the diversity of learners, who are assigned assessment tasks and learn at a pace adapted to their needs (Alderson, 2006). Alternative assessment options for digital environments can include the following:

Online tasks

The overall assessment approach recommended in the digital environment is to forego large intensive tasks, the results of which we usually only see at the end of the process. This type of pedagogical approach to assessment, which includes the integration of technological tools, constitutes a cornerstone of the teacher's digital assessment

literacy. Instead of summary assessment tasks, there is a "dismantling" of the learning process into short performance tasks, including indicators, is compatible with the digital learning environment and strengthens the link between learning goals and deliverables (Eyal, 2010). Digital environments can serve as platforms for various tasks including the solving of complex problems that require the locating information from a variety of sources, creating instructional videos on various topics, team assignments, collaborative writing processes, research tasks, and projects that ultimately yield a product. A Content Management System (CMS) can serve both as a learning environment and as the development and publishing platform for tasks with various components (such as formatted text, photo gallery, surveys, feedback, TalkBack), with products in different formats and a link to environments such as the Web 2.0 platform. These platforms invite the development of new criteria for evaluating learning, such as originality, quality, and peer reactions to the product (Eyal, 2010). The following are some examples of how to combine short-term implementation tasks with technological tools, as methods of alternative assessment:

Digital portfolio

The basic concept of using computerized portfolios is not new to education systems, but Web 2.0 technologies have increased the involvement of learners in the evaluation and collection of data. Web 2.0 and other technology tools are making it quicker and easier than ever to create digital portfolios of student work—a method of showcasing student progress that experts say increases student engagement; promotes a continuing conversation about learning between teachers, students, and other participants in the learning process; and extends academic lessons outside the classroom (Ash, 2011). The digital portfolio may include written, recorded, or visual items, homework, documentation of processes, tests, performance tasks, deliverables, and more. The portfolio is the ideal way to evaluate learning in a digital environment, mainly because students are partners in determining the content (Suen & Parkes, 2002). Use of multimedia allows the publication of work to a broad audience, as opposed to the traditional presentation to the teacher only. The portfolio structure and content can be easily adjusted to varying needs. You can search within the portfolio, and secure the entrance to the digital portfolio. Teachers with a high level of digital assessment literacy might opt to use the digital portfolio to share evaluation components using community interaction tools such as discussions or construction of sub-communities. Finally, it is proposed to use the digital portfolio to assess students' thinking, especially as a tool that helps students reflect on the learning processes (Hill, 2002).

Forums

Although the use of forums for learning today is perceived as relatively outdated, there are learning environments that include them as part of the learning process (Lieblein, 2000). The use of forums might move on a continuum: for example, from technical support only, through to a central role in the publishing of tasks and work products. Researchers have put forth different methods for the analysis and assessment of activity in the discussion groups: Some address the quantitative dimension—the number of times a learner posts in the discussion group (Tirosh, 1999), and some focus on the structural and qualitative dimensions of discourse and social interactions in the discussions (Fahy et al., 2001; Garrison et al., 2001; Henri, 1992; Spatariu et al., 2004).

In a comprehensive study in this area, the use of forms was analyzed as a whole, with reference to structure and content (Fahy, Crawford & Ally, 2001). The analysis identified five patterns of content: questions, statements, quotations, responses and links. In order to examine the components related to social networking discussion groups, a Transcript Analysis Tool (TAT) was proposed, which allows measurement and evaluation of the structure and content, focusing on the patterns of the exchange on the network. The researchers hypothesized that a holistic analysis relating to the communication within a discussion group as a "unit" would provide a richer set, and thus maintained that the discussion group provides "a goldmine of information on psycho-social dynamics" (Henri, 1992). The study examined a group discussion that was part of an online course. The structural characteristics studied include "physical dimensions" of the network, and levels of social interaction. The model included dimensions of both structural analysis (e.g., group size and potential contacts) and content analysis (e.g., question types, messages that include personal information, and so on) in the discussion group. Today, most of the activity taking place during learning through discussion groups has been replicated in the social networks.

Online peer assessment

Peer assessment can focus on outcomes or on process, and is characterized by dimensions related to objectives, content and how the activity is managed (Topping, 1998). Characterization and presentation of the evaluation criteria are key components of this assessment (Miller, 2003). Many studies report peer review as an effective strategy to empower the learning process (Falchikov, 2003; Topping, 1998). Peer assessment helps learners improve their products by developing a deep understanding of the assessment criteria and their significance, providing opportunities for "learning by example" (Ronen & Langley, 2004) and from classmates' feedback. It turns out that the evaluation itself is as important as the feedback received by students from their peers (Dominick, Reilly & McGourty, 1997; Zariski, 1996). Many studies compared peer assessments to teachers' evaluations (Falchikov & Goldfinch, 2000). In practice, there is disagreement as to the legitimacy of using peer scores; therefore it has been proposed that peer scores undergo additional stages of validation based on comparison with teachers' assessments (e.g., McGourty & Reilly, 1997). Based on these studies, it was concluded that peer assessment should not be used as a substitute for teachers' assessment nor in addition to it, and that this method degrades the quality of assessment and its purpose on the whole. However, peer assessment involves a great investment on the part of the learner and therefore deserves a suitable reward, to reflect the true quality of assessment and not just the fact of its execution. A deep examination of peer assessment is a great deal of work for teachers, and it almost impossible to provide immediate feedback on its quality. On the other hand, a lack of feedback reduces the motivation to perform a quality assessment. The main obstacle in the implementation of peer assessment is the organizational and management skills required of teachers; here too, the use of technological systems may help in the effective organization and presentation of information and provision of feedback (Liu et al, 2002; Cuddy et al., 2001; Davies, 2000).

The above assessment processes increase involvement of the learner in assessment while decreasing the weight of the teacher's assessment. Teachers with digital assessment literacy share the information on the criteria and their establishment; creates, adapts and assigns tasks to learners; and together they collect information about learning, relying on information documented using technological tools. After the teacher documents and summarizes the information, he discusses the results with students, and together they interpret them. The conclusions are used for planning future teaching and contribute to improved definition of tasks and student empowerment (Eyal, 2010).

The need for the teacher to step aside

In advanced learning processes, especially in the digital environment, part of the teacher's role as an assessor is to know when to step aside. The skills required of learners to successfully function in the 21st century include: locating and acquiring knowledge independently; wise use of knowledge to solve problems; informed choice and critical evaluation, at the same time developing standards, and communication and collaboration skills. In general, it can be said that in order to function successfully in the 21st century, a person must be capable of adaptation and autonomous thinking; in other words—a capacity for self-directed learning that will persist throughout life. This means that students themselves lead the learning process: Learners will determine the objectives, choose the ways to achieve them and develop their own indicators for evaluation. Thus, students will develop their awareness and understanding of the learning process they undergo (Black & Wiliam, 1998). This meta-cognitive awareness contributes both to improve achievement and foster self-learning skills. The term "self-directed learning" refers to students' ability to consciously monitor their thoughts, feelings and behavior while learning (Zimmerman, 1986, p. 307). This means that the self-regulated learner can channel and focus his thoughts, his feelings and actions in order to achieve the learning goals (Pintrich, 2000; Zimmerman, 2001). All self-directed learning theories are based on the premise that learning is not something that happens to learners, but something that the students' does. This understanding change the educational focus and emphasizes the personal strategies they employ at their own initiative to improve educational outcomes and the learning environment. The characteristic common to all theories dealing with this issue is the self feedback "loop"—students monitor the effectiveness of learning methods and their learning strategies, and respond to feedback that they themselves produce in a variety of ways (Zimmerman, 2001).

Learning environments that foster learning and self-regulation

To realize the objectives of fostering complex self-guidance in learning, the learning environment should be flexible, allow freedom of choice (Schunk, 2000), and rely on democratic principles. The more these principles are reflected

in the learning environment, the greater the odds of developing a climate that promotes learning (Silberstein, et al., 2001). Flexibility can be accomplished through the ways in which the learning environment is organized, the time allotted to different types of activity, modes of learning and the content taught. A digital learning environment can offer a rich variety of choices and opportunities to select the time, subject matter, methods of learning and more. The learners can choose what and how to learn, what to focus on, which sources and learning materials to use, when to learn and at what pace, with whom to learn, and how to be evaluated. The multitude of opportunities and diversity of subjects contributes to inculcating norms of "behavior of choice" (Silberstein et al., 2001), while fostering a positive image and strengthening confidence, freedom the fear of making mistakes, and the courage to take chances. A digital learning environment that encourages choice may allow data collection from various sources, deployment of alternatives, comparing various options, setting priorities, making selections taking into account existing constraints (Silberstein et al., 2001). At the same time, the ability to make rational and well-founded choices is needed. Research-based learning, with the performance of tasks and information gathering, promotes freedom of choice and provides learners with guidance in their choices. Coping with these methods brings about a sense of responsibility for the selections made (Fouts, 2000; McLoughlin & Reid, 2002; Pellegrino, Chudowsky & Glaser, 2001; Quellmalz & Haertel, 2000).

I present herein some examples for learning and assessment that promote self-directed learning in digital environment and apply the principles of freedom of choice and creation of a community:

Blogs

In recent years, blogs have been adopted by educators as a means of teaching (Twist, 2004), stemming from the belief that their integration in the learning process increases motivation and student autonomy. Students feel greater "ownership" of knowledge; they can share with their classmates and create peer learning (Hyung, 2008). This is supported by theory of development put forth by Vygotsky (1978), who points out that the realization of the student's development potential depends on the experience of social interaction with trained personnel, an adult or friend. Students who participate in the writing of a blog as part of a digital learning environment develop personal writing skills and reflective thinking, as well as interpersonal interactions. They describe their experiences, try to express moments of inspiration, reveal things to others, and impart knowledge or life experiences. This style increases their confidence and self-image, and helps develop a positive approach to themselves as learners. The learner's blog is his personal learning space. Digital assessment literate teachers should beware of making the blog an obligating task (Hurlburt, 2008). Digital assessment literate teachers should foster students' sense of responsibility for their own blogs, while obliging them to read their classmates blogs, and set a suitable amount of feedback and responses. The blog assimilation process is a lengthy one; sometimes the resulting benefits are apparent only at the end of the process. Teachers need to spend more time to evaluate each blog—throughout the writing process and not just at the end.

Despite the blog's contribution to teaching and learning processes, there are those who cite the problem of its use in the context of evaluation. Hurlburt (2008) claimed that she does not see any real possibility for scoring the blog. At the same time, in recent years, teachers' deliberation on the assessment of blogs has led to different schools of thought, criteria and scales. One school of thought, based on summative assessment, for example, introduced in a blog by Megan Poore (2008), presents clear criteria that are to be met by students: content criteria such as ideas, analytical skills, creativity, and information gathering; criteria related to writing posts such as the quality of writing, relevance of links or attached media, frequency of writing, reference to the community, provision of feedback; and criteria related to design and management, such as how the blog is organized, its look and feel, and so on.

In post written by Mark Sample (2009) in his blog, he suggests a five-level scale for the assessment of students blogs: From a blog that lacks focus or tends to repeat points already raised and posted by other students to focused blogs that show in-depth thought. Another school of thought emphasizes formative assessment based on the learner's ability to cope with research and deeper levels of learning, while emphasizing the process and not just the final product. For example, is the writing based on outside sources of information or only on independent thinking, what additional perspectives are presented in the blog. The learner is an active partner in this assessment process, providing the instructor with information on how he learns, leading to an additional criterion—whether or not it is possible to discern the author's reflections on the issues he raises.

At an international conference on media education (ED-MEDIA) held in Canada in 2006, findings were presented on the integration of blogs in courses (Birney & Barry, 2006). The researchers noted that the results did not indicate deep reflection as a result of writing blogs; as an explanation, they raised the possibility of a fault in the assessment process because students were not required to write the blog and were not trained in reflective writing. Reference to these aspects of evaluation during the course of writing the blog constitutes advanced digital assessment literacy on the role of the teacher.

Wiki as collaborative writing

A wiki is a collection of linked web pages accessible for editing and shared by several people together (Leuf & Cunningham, 2001). The term "wiki" describes both the pedagogical approach and the technological tool, one example of the significance and impact of technology on pedagogy. Wikis have a variety of uses: A survey conducted in 24 universities (Schwartz et al., 2004) points to the wiki as a tool for creating interactive activities, advertising content, viewing collections of links/information, projects, FAQ collections, and even as textbooks (Ravid & Rafaeli, 2006). Learners view the wiki as a valuable learning tool. A wiki environment is essentially different from other environments where there is dialogue between learners. The basis of the wiki is the article or text, on which the activity is performed. On the other hand, discussion groups, e-mails, blogs based on an ordered or hierarchical chain of responses should be evaluated accordingly. Wiki platforms may also serve the needs for assessment of cooperative learning and are effective for measuring cooperation because they contain records of the content editing by all students on each page. (Bruns & Humphreys, 2005; Forte, Andrea & Bruckman, 2006; Meishar-Tal & Tal-Elhasid, 2008; Reitman, Augar & Zhou, 2005; Voss, 2005). The tool's main weakness is that it does not necessarily result in meaningful creation. In many cases, work on the wiki is network-like in nature, with each participant focusing on their own mission, while learning from others contributes to them — this as opposed to people working together on the same task (Siemens, 2004).

The applications and platforms presented may be integrated as assessment activities that reflect in a complete and qualitative manner the learning process in the digital environment. Combined with tools, such as self-assessment, personal practice and reflection, the foundation for more efficient self-directed learning processes is laid. Personal assessment plays a major role in the evaluation process, most of which is passed on to learners. The role of reflection is increased, and feedback can be primarily provided by the learner himself. Teachers do not intervene unless their help is required to remove obstacles to student progress. This intervention is carried out through feedback, which promotes self-esteem and learner self-feedback. In this way, assessment is interwoven into the teaching and learning processes. Assessment focuses on the students' ability to use previously acquired knowledge to cope with new situations, as well as the ability to apply this knowledge to guide educational activities. Teachers assist and encourage students in the self-assessment of their own stated goals, and encourage them to cooperate within and contribute to society. Teachers help students choose or create content matter according to their needs. Learners need to critically produce information, adopt or develop appropriate criteria for evaluation, and establish their own self-knowledge. Each learner needs to use self and mutual feedback to evaluate the achievement of their true goals. This evaluation style is particularly suited to the information age, characterized by skepticism about knowledge: Is there an agreed-upon truth, which can be the basis for a unified program of study? Is it clear how learning occurs and how teaching promotes it? Is there a theory of learning and teaching that is better than others and accepted by all? Apparently there is no agreed upon truth, there is no "right" and "wrong" (Levin & Nevo, 2000; Wiggins, 1998), so there is no justification for judgmental feedback on the role of the teacher because there is no agreed upon criteria for what is "right."

Conclusions

Based on the above, several conclusions can be drawn about the role of teachers as an assessors in the digital environment: a) The role of teachers who appreciates a digital learning environment is primary and significant; b) wise use of technological tools to assess learners is essential for the students, teachers, and for other students participating in educational processes; c) teachers in the 21st century prefers to use technologies that advance the assessment methods that emphasize the learning process, enable peer assessment and develop reflective abilities.

A teacher with digital assessment literacy will be able to intelligently use various applications and technological systems to advance students, adapting a variety of assessment approaches. The level of literacy moves on a continuum, starting from the use of learning management systems as part of traditional assessment processes, such as computerized tests; to a higher literacy level that, in addition to traditional processes, includes the implementation of tests, tasks and projects in a digital environment, the performance indicators for which are determined in cooperation with students; through to implementing advanced estimation approaches based on constructivist-social learning and the development of self-targeted learning, where as part of the assessment teachers must also know how and when to delegate the processes of assessment to the students.

The following abilities and skills are required of teachers for digital assessment literacy:

Basic Digital Assessment Literacy

- The use of digital tools in all phases of the evaluation process: from design to drawing conclusions.
- The use of an LMS database to enable effective and focused acquisition of information about students, identifying sources of error in the teaching process, identifying difficulties on tests on both personal and class-wide levels, and examining various cross-sections of data to draw conclusions and plan instruction.
- Production of relevant assessment reports from within the LMS for various parties involved in the educational process.
- Routine testing of the effectiveness and suitability of the selected technological tools and components.
- Organization and documentation of all the mutual feedback and their efficient use to monitor and promote learning.
- Management of formative and summative assessment scoring and interpretation of results based on a digital database.
- Effective use of assessment data in the digital database for pedagogical decision making and for planning the teaching–learning–assessment processes.

Intermediate Digital Assessment Literacy

- Minimization of the number of computerized tests used for learning assessment.
- Holistic view of teaching and learning integrated with assessment, using alternative methods of web-based assessment and advanced information technologies.
- Ability to diagnose and assess a range of study and developmental areas using performance tasks that incorporate various technological tools.
- The use of variety of methods and digital tools to gather information on the progress of learners.
- The selection of assessment methods and technological tools appropriate to the learning objectives and teaching methods.
- The combination of several technologies for assessing and measuring learning, to increase the validity and cross-check information.
- Development of appropriate criteria for evaluating performance in a digital environment, and using feedback and guidance to promote learning.
- Awareness and ability to cope with the risks and inherent ethical issues associated with the use of digital assessment tools.

Advanced Digital Assessment Literacy

- Share the methods for assessment and the formation of evaluation criteria with learners, using learning systems and applications that enable transparency and collaborative writing.
- Encourage cooperative learning by having students expose their learning outcomes to their peers at all stages of implementation and at the end of the learning process (digital portfolio, personal learning environments, wikis, blogs, podcasts, publishing, multimedia databases, and so on).
- Encourage students to evaluate their peer through continuous integration of collaborative technologies that enable comment and discussion, while developing skills for learners and promoting the giving and receiving of high-quality feedback.
- Collaboration with others as part of the assessment process, by disseminating information, and providing access and permissions to various digital environments.

- Ability to produce rich assessment information about both learners and the learning-teaching process, based on documented data collection and cross-checking a variety of digital tools over time, and the ability to use interpretation to promote learning.
- Encouraging learners to use self-assessment and reflection, using advanced digital technologies such as writing a blog, computerized practice tests.
- The creation of online anonymous feedback and evaluation surveys on the learning-teaching process and the teacher, and the use of the information obtained for self-reflection to improve instruction and assessment.
- The ability to identify situations that require attention and sensitivity to the learner's feelings, identifying the learner's needs in the social and emotional realms, and developing his abilities through a thorough reading of the deliverables, such as personal blog.
- Providing choices for learners with regard to goals, tasks, information sources and products, according to personal preference, while opening their eyes to a variety of options offered by the Internet.

The level of digital assessment literacy is an index of teachers' quality and professional development. Digital assessment literacy, like any literacy, develops through interaction with the environment, not only the human environment, but also the digital environment and the opportunities it provides. Teachers in the digital environment need to acquire knowledge and skills to help in the selection and use of assessment tools. To this end, the involvement and guidance of a knowledgeable mentor is needed to expose teachers to both the overt and covert potential for assessment in the digital learning environments as part of teachers training process.

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