

## Research Article

# Multimodal Educational Assessment: From Transmissive Learning to Creative Production

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**Abstract** Multimodality is an emergent aspect of educational assessment that has received increasing attention from educators and educational researchers. Unfortunately, this new assessment practice has been entrenched in the hegemonic gaze of teaching- and learning-centric pedagogical paradigm from the outset. To reconstruct multimodal educational assessment, this issue paper probes into three essential aspects of assessment, namely, a) ownership and legitimacy, b) knowledge production, and c) participation and productive space. Problematizing these core aspects not only furthers multimodal assessment researchers' understanding of the core issues of learning through assessment practices but also delineates the domain of multimodal educational assessment in terms of theory and practice.

**Keywords** Legitimacy, participation, multimodality, diversity, creativity

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## Introduction

This article, conceived of as an issue paper, problematizes the recent emergence of multimodal educational assessment (henceforth, MEA). My interest in MEA dated back to my doctoral studies on multimodality, social media, and multiliteracies. On my current role as lecturer in English as a Second Language and Literacy Education at Charles Sturt University, the largest distance education provider in Australia, I have been able to continue exploring MEA as theory and practice. Over the years I have been compelled by an urge to push for a paradigm change in this area. Therefore, in the article I argue for reconstructing a critical, creative pedagogical space of assessment to eschew the pitfall of passive learning and to stimulate assessment innovations. To achieve this goal I focus my attention on unpacking the following three questions which, in my view, are central to understanding MEA.

1. Who are involved in this new assessment practice of MEA?
2. What should and can be assessed in MEA?
3. How should MEA be implemented?

The three questions encapsulate my concerns about the primary issues of learning in MEA, *inter alia*, legitimacy, ownership, participation, process, and practice (Lingard, Hayes, & Mills, 2003). Examining these issues is crucial for delineating the domain of MEA and its assessment development and evaluation. As such, the sections that follow will first provide a review of several trends in MEA and then present an examination of the core issues that have affected this new assessment practice.

## The emergence of MEA

Multimodal assessment appears mostly in medical literature from the early 1980s as an inclusive term for studies using image-making devices and software such as MRI (Magnetic Resonance

Imaging) and Ultrasound (Fantuzzo, Dimeff, & Fox, 1989; Hoffman-Plotkin & Twentyman, 1984). Though largely irrelevant to education, this kind of practices foretold the possibilities of what new technologies would be capable of generating in fields such as education. The appearance of multimodal assessment in education overall is only nascent, following the rise of multimodality and social semiotics research in the late 1980s (Hodge & Kress, 1988), of multi-literacies in the mid-1990s (Cazden et al., 1996), and of multimodal discourse analysis in the late 1990s (Iedema, 2003).

From a semiotic perspective on which linguistic research is properly based but studied separately, Hodge and Kress (1988) point out that text in general has become increasingly multimodal in the way semiotic resources are employed to make meaning. Their writings have subsequently sparked interest in uncovering the mechanisms through which multiple semiotic resources are mobilized in everyday social interactions to negotiate (and transact) meaning. The prosperity of social semiotics research as well as attempts to apply the findings to learning and teaching of multimodality has become visible (Kress, 2013; Van Leeuwen, 2004).

Differing from Hodge and Kress's (1988) interest in semiotic interactions, the multiliteracies endeavor originally united by the New London Group (Cazden et al., 1996; Walsh, 2007) is primarily concerned with the impact of new technologies, fast globalization, increasing social diversity on language and literacy education. Taking sociology of education as a vantage point of departure, it emphasizes the importance of developing suitable pedagogical frameworks for incorporating multimodal resources. Strategies such as overt instruction, situated practice, critical framing, and transformed learning have been widely cited and applied (Cope & Kalantzis, 2009).

Grafting social semiotics and multimodality with discourse analysis, multimodal discourse analysis otherwise tends to import multimodality to enrich and strengthen the discourse approach to education studies. Multimodal discourse analysis may take distinctive forms depending on whether social actions are captured in discrete frames (stills, transcripts, etc.) or continuous frames (video, audio, animations, etc.) and on whether they are collected from the extant texts or from ethnographic observations. Kress and van Leeuwen's (1996) early work, for example, concentrate on applying the systemic functional linguistics framework to analyze static images. Jones and Norris (2005), by contrast, employ an ethnographic position to understand mundane social interactions such as shopping and dining by using video-recording devices to document them. Other researchers (Baldry & Thibault, 2006; O'Halloran, 2004) are interested in exploring online and digital spaces such as websites and mobile phones. Overall, the application of multimodal discourse analysis is largely methodological and instrumental in research within education, social sciences, media and communication

To date, two trends have prevailed in multimodal discourse analysis. The first trend emphasizes the semiotic approach to text and textuality (Van Leeuwen, 2004) to contest the dominance of the linguistic mode. Text is seen as not solely discursively constructed. Its materiality, presentation, and borders are expanded. Images, actions, architectures, and even the visualization of senses are included. Such expansion thus rallies for paradigm changes to attend to advances in new technologies and institutionalization which have been studied over the past 20 years but are still in need of robust research (Kress, 2013). The second trend focuses on understanding social interactions as multimodal and exploiting non-linguistic devices and instruments to archive and analyze social interactions (Norris, 2004). This complex task involves not only a strong perception of new technologies, media, materials, resources, and organizations but also an interdisciplinary re-imagination of affordances and interactions. In both trends, uncovering the mechanism that influences a multitude of modalities and their interplay in making meaning is central. Whilst such an endeavor is believed to lead to new insights into textuality, discourses, social formations, and consequently actions (Kress, 2013; Lemke, 2009), a change in mediation (in terms of materials, medium, and modes) signals a more imminent need to rethink educational assessment. A simple addition would not be useful.

In response to the trends in the above multimodality-fused areas as well as developments in educational assessment, MEA to some extent has already engaged in a full-fledged agenda (Isaacs, Zara, Herbert, Coombs, & Smith, 2013). Overall, this agenda underscores the importance of immersive use of multiple modalities in addition to the linguistic modes (such as essays) in consideration of their newness to learners and educational practitioners (Sorapure, Takayoshi, Zoetewey, Staggers, & Yancey, 2006). Hung, Chiu and Yeh (2013), for example, propose a design rubric to assess students' application of multimodal texts such as PowerPoint slides, in their new literacy practices. Their study adopts a multiliteracies perspective (Cazden et al., 1996)

to design formative assessment tasks for developing students' multimodal awareness and competencies.

Furthermore, this agenda concentrates on acquiring knowledge and awareness of modality interactions. The mission of MEA is to use multimodal resources, instruments, spaces, and processes afforded by emergent technologies and materials for educational assessment purposes (Murray, Sheets, & Williams, 2010). Looking at filmmakers' reflections on their filmmaking processes such as choosing texts, genres, and tools, several researchers have explored from a design point of view how learning can be enacted analytically and methodologically in the processes of multimodal semiotic production (Ellsworth, 2005; Lindstrand, 2010). Learning to use multimodal resources and tools in this respect is an important pathway for learning, and therefore, a useful form of assessment.

The turn of educational assessment from mono-modality, mostly written and standardized, to multimodality is a positive gesture. It helps loosen up the grip of the linguistic mode (including standardized testing) on learning outcomes. An acknowledgement of this turn at any rate is justifiable given that MEA is largely under researched (Kress, 2009). It will also help booster educator's confidence and credibility in deploying multimodal assessment. However, in the following sections I will argue that MEA should not concentrate singularly on incorporating semiotic resources to measure learners' performance. Rather, the repercussions of globalization, knowledge production, digitization, and diversity have been challenging this multimodal assessment quest for a shift in pedagogical space and theorization. Successful development and application of multimodal assessment in education needs to re-examine the changes that the inclusion of multimodality has caused to the following fundamental aspects of educational assessment. Without adequately addressing these issues, hasty implementation of MEA is akin to a blind man riding on a blind horse.

### **Legitimacy and ownership: who are involved in MEA?**

My survey of the domain of MEA begins with a simple question: who are involved in assessment processes? Simple as it may seem, this question probes the legitimacy of assessment and the ownership of power to conduct assessment. Through the lens of legitimacy and ownership, it problematizes two features of MEA: 1) the relationship between assessment participants and 2) the power structure amongst assessment participants.

In conventional educational assessment practice, aside from logistic considerations, the relationship between assessment participants is predetermined, with little room for contestations. Two main parties involved in the assessment process, namely assessors and assessees, are placed in a blatant hierarchy (Gipps, 2002; Nitko, 1996). On their journey to compete for professional access, resources, and status, learners as assessees are positioned as incompetent, unaccomplished, and dependent in forms such as apprenticeship. Teachers, lecturers, educational professionals, and other stakeholders as assessors have the authority, if not the absolutist control, over learners. They are the gatekeepers of norms, standards, criterion, and regulations, endorsed by institutional orders to enlist and exclude trainees.

Although much of the current assessment practice in education aims at safeguarding professional standards in name of accountability (Gipps, 2002), the power relationship evident in assessment practices may undermine learners' confidence. Such assessment practices are often unconsciously exercised to obstruct challenges from new competitors (often learners) through militant standardization of professional communities and practices. A newcomer would be indoctrinated to mimic a gatekeeper's practices of a professional community to secure acceptance. Oftentimes, subordination and conformity are consistently normalized through guilds, unions, groups, clusters, and communities of practices (Robinson, 2009). Morphing newcomers into (the accomplices of) gatekeepers for the sake of maximizing their collective gains (profit, reputation, etc.) enables the assessment regime to consolidate its existing industrial hierarchy while eschewing the turmoil of power redistribution.

In MEA practice, however, the traditional power structure is no longer stable, if not radically shaken, in consideration of the following perspectives. Ranci re (1991) argues from a humanitarian point of view that every learner possesses full autonomy to make rational decisions as well as competence in creating knowledge. This acknowledgement, for one thing, no longer reveres knowledge as a sacred domain occupied solely by elite social groups. Nor does it continue mystifying knowledge production as an enigmatic process to the public. On the opposite, knowledge is envisioned as multiple and multidimensional, without specific

orders or ranking (Resnick, 2006). Categorizing knowledge and consequently its creators was a useful, historic practice that has served its full term. It should be retired gradually from the present and future sites of knowledge production while disciplinary borders either disappearing or remixed (Brabazon & Redhead, 2013), to make room for new enterprises. Human beings, as has been argued repeatedly (Gray, 2013; Rancière, 1991; Robinson, 2009), are naturally creative in the knowledge niche to which they have confidence in adding value. Epistemologies shaped by immersion and participation, further, equip learners with an intimate understanding of their knowledge niches and their processes (e.g., the gains and losses). An innate sense of ownership, belonging, and expertise can be engendered simultaneously, which can be rarely enacted by outsiders, irrespective of their status and expertise.

Secondly, the learner-as-creator thesis merits a revisit while learning space is under relentless reconstructions (Bedard-Voorhees, Johnson, & Dobson, 2011; Long & Ehrmann, 2005; Oblinger, 2006). In one sense, this thesis stresses that participants in learning spaces such as classrooms, workshops, community centers, and workplaces be multiple. Teachers, principals, librarians, and managers in school classrooms are all learners interacting with one another as well as with students in developing and sustaining an ecological space of learning. Everyone plays a significant part regardless of the dynamics of collaboration (being cooperative, competitive, or combative), striving to meet their own desires and wants. Multiplicity of learning participants in this sense implies that assessment is not mono-directional moving from assessors to assessees. Rather, assessment is multivariate and multi-directional in a network of participants, processes, tasks, projects, and instruments.

In another sense, learning space theorization has already undermined the hegemony of formal learning institutions including schools and universities (Cope & Kalantzis, 2009). Ubiquity of learning space in particular signifies more than a return to practice-based learning in community, workplace, and family. It dissolves the borders and barriers among modes of learning to generate increased opportunities for learning participants. Online communities, 3D simulations, and glass technologies, for example, act as catalysts for such change. The ideological and structural apparatus that relies on traditional formal learning institutions for reproduction, promulgation, and surveillance would be forced to justify its legitimacy.

Thirdly, new knowledge creation dynamics and processes have subverted the role that learning participants play in assessment practice as well as the relationship among them (Boud, 2010). It is self-explanatory or even tautological that knowledge production is driven by desires for new ideas, products, procedures, and processes unknown to the gatekeepers (Robinson, 2009). At a deeper level, such unhampered desires can cause anxiety, insecurity, vulnerability, and even hostility among assessors and assessees in the conventional classroom-based assessment practice. It is undesirable on the teacher's side as many of them may not have confidence in domains in which they have little expertise; e.g., creating multimodal artifacts or identifying online games with language education value. On the learner's side, discomfort and disquiet among some of the learners who are accustomed to the convention of explicit instruction and transmission may become regular. For some learners, being the knower can trigger a series of identification crises that may result in questioning of their teachers' competency, the relevance of prefabricated assessment items, and the usefulness of (corrective) feedback. In the context of creative destruction (Metcalfe, 1998; Schumpeter, 1942), all these scenarios may eventually lead to a threatening reshuffle, or even a dismantling of an extant learning space, which is organic to the very formation of a new learning ecology.

Fourthly, unpacking this question is not to seek an educational turn from a teacher- and teaching-centered model to a learning- and learner-centered model. This widely tooted turn in times of digitization, globalization, and diversity is incapable of capturing the kind of changes needed for the present and future education as well as of educational assessment. At any rate, it is not a revolutionary turn but a reiteration of the principle that approximating learning and learners is the core practice of education at any time (Nunan, 1993). The educational practices of the past to a greater extent diverged from this principle, while being manipulated to respond to political, economic, ideological, institutional, and technological contingencies (Gatto & Graham, 2001). The feudal systems that sustained the absolutism in old China and pre-industrialized Europe, for instance, had every incentive to stultify their subordinates to continue the monarchies' reign (Robinson & Acemoglu, 2011). Rather than enlightening people, these monarchies monopolized printing technologies and selected elites through means such as standardized testing to form unions of extractive institutions to maximize their interest. Such were continued in the Industrialization Era in the form of monopoly, batch training workers

through uniformed (public) school education, and other ideological machines (Gatto & Graham, 2001). In teacher education, at the extreme, non-learning, non-productive institutions such as teacher unions and registration bodies have become the guardians of the interest of teachers, learners, and learning institutions (Lieberman, 1997).

Therefore, what drives this question is a thesis that the learners are competent as workers, producers, and creators, as good as, if not better than, their so-called superiors (i.e., teachers, lecturers, supervisors, mentors, or seniors), at representing, composing, and repurposing knowledge (Resnick, 2006; Thomas, 2005). Many of them are even able to adapt better and faster to explore unknown territories thanks to their distinct advantages in terms of diversity, participation, and creativity. The renaissance of participation and productivity in learning and learners, as will be explored in the following, may help flatten the power structure of learning institutions, consequently restructuring many of the existing learning institutions such as schools and universities. The lens of creativity can enable the society to see through the history of education that learning institutions should be established by the learner, of the learner, and for the learner.

### **Knowledge, productivity, and performance: what to assess in MEA?**

While the first question examines the legitimacy and agency of MEA, the second question re-examines the objectives of assessment. It focuses on what learning participants can glean from their participation in multimodal assessment practices rather than on multimodal features and attributes. In conventional assessment, the answer is straightforward. Assessment is so deployed to measure, enhance, and select learners on their performance (Gray, 2002). This is particularly the case in the global crusade of standardization and standardized testing such as the IELTS and the TOFEL.

Irrespective of their names and forms (being project-based, task-based, problem-solving, or standardized testing) as well as of the creator's intention, the outcomes of assessment are predetermined, predictable, and measurable (Popham, 1999). Assessment outcomes can often be tailored to respond to superior gatekeepers' manipulations, wittingly or unwittingly. For instance, Australia's immigration policies can affect IELTS (International English Language Testing Scheme) examiners' decisions and even erode the so-called criterion-referenced principle underlying this large scale language testing. How assessment outcomes and objectives are phrased, being for learning, of learning, or as learning (Scarino & Liddicoat, 2009), makes little difference in this regard. At the very core, the assessment regime is gatekeeper-centered with learning and learners positioned as subordinates in this structural inequality.

Those objectives become questionable in MEA in which the relationship and power dynamics are subverted and assessors become learners and assistants to other learners (Siegel, 2012). If the new learning regime is built upon how knowledge is perceived, then multimodal assessment is no longer about transmitting content. Content transmission is certainly indispensable but should neither be positioned as the central business of education nor be micro-managed by educators and teachers. Freire (1970), for example, vehemently attacked the "banking method" that insists on the knowledge transmission model, frustrated by the dogmatic colony of content in education and subsequently, Rancière (1991), a French philosopher, launched a similar attack.

Disappointedly, such frustrations have been rarely taken seriously in the 21st century even in many developed countries where individuals can afford generating, archiving, redesigning, and disseminating content in online spaces. Conventional assessment practices continue attenuating the centrality of content or what is known as receptive knowledge. Admission and graduation criteria in teacher education are predominantly content based, characterized by subject, discipline, and skill knowledge. "Banking knowledge" condemned by Freire (1970) and Rancière (1991) continues being glorified whilst restructuring and the creation of knowledge is diminishing.

Knowledge transmission in the past was partially afforded by the corporeal (oration), material (rock, silk, print), and mass media (e.g., radio, TV). In contrast, knowledge transmission nowadays is mediated by the computer, the Internet, cloud computing, and the semantic web. The digital replacement of the print media is so far-reaching that passive learning such as memorization has been losing relevance. Rote learning is equally questionable as robots have been engineered to simulate and even outplay humans particularly in pattern driven games (chess, Ping-Pong, tennis, etc.). FoxCom, for example, has plans for gradually replacing many of

its assembly lines with intelligent robotics over the next few years (Gore, 2013).

Knowledge is no longer about archiving and transmitting databased content but is about creating new knowledge, through remixing, mashing-up, or the generation of original content (Lankshear & Knobel, 2011). In a similar vein, the objective of multimodal assessment should not concentrate on assessing what and how much learners know but on assessing how learners acquire and use knowledge to solve problems and on encouraging learners to become makers of ideas, concepts, and designs (Gauntlett, 2013). Multimodal assessment will need to focus on identifying problems, establishing knowledge niches, locating devices, instruments, or methods, coping with uncertainty and even failures and developing networks.

The shift to knowledge production has two consequences. First, an upsurge in knowledge workers is imminent given the awakening of those who are traditionally seen as recipients of knowledge (Cowen, 2013). Knowledge production is no longer the privilege of university professors, academics, or of some higher end inventors. Anyone who has an interest and expertise can contribute to the knowledge sphere regardless of their age, gender, and physical conditions. As such, how society reorganizes itself to capitalize on this transition is a paramount challenge. In the meantime, this shift further reinforces the current trend in developed countries where the knowledge economy is about to take the lead (Powell & Snellman, 2004). Technological, commercial, and institutional innovations are seen as the driving force for economic growth.

Second, this shift forces industries and disciplines to re-examine their area of expertise. Disciplines will need to think about the common core of skills, strategies, and competence; or in other words, the core practice that will enable the possessors to adapt and thrive. For instance, teacher education should not concentrate solely on training teachers to know about mathematics, language, diversity, and children's development in that the majority of academic knowledge no longer requires teachers to be the human mediators. Rather, it should encourage teachers to develop, organize, enhance, and sustain learning and creative communities. It should also cultivate teachers' capacity to be able to advise on self-directed learning plans, motivating and encouraging learners, and connecting learners with communities, workplaces, occupations, and other spaces (Nunan, 1996). The need for teachers to become expert in completing curriculum tasks is decreasing whilst the demand for teacher to stimulate students' productive desire and to contribute to the world around them is increasing.

This shift of thinking aligns with the escalation of technological affordability and social diversity. Increasing economic, technological and institutional affordability enables and prolongs individual and collective productivity (Chowdhury, 2013; OLATUNJI, 2013). In the meantime, growing social and technological diversity encourages the pursuit of atypical, non-mainstream life and work experiences (Corrin, Lockyer, & Bennett, 2010). Common, mainstream social experience would cease to be the desired goal of education, with mass production being threatened by 3D-printing-type technologies. Re-clustering people into new networks of shared experiences and aspirations will become a consistent practice. That in itself has contributed to the prevalence of web 2.0 social networking spaces such as Facebook, YouTube, and Google Plus. Therefore, it will become increasingly difficult, if not impossible, to continue rote-based and rule-based learning, not to mention assessment. Eventually, what needs to be assessed should not be determined by teachers or lecturers in the populist central planning model but by learning participants and the kind of products that they desire to produce.

### **Participation and productive space: how to assess in MEA?**

The third question is concerned with the processes and means involved in commissioning multimodal assessment. The answer is simple if the 'assessed' in MEA is within the scope of the traditional or conventional scope of knowledge. Tasks that require learners to present, demonstrate, and reflect on certain knowledge should suffice (Bedard-Voorhees et al., 2011). Even the widely disputed standardized testing can be considered an effective, life-saving instrument for teachers and students to measure receptive knowledge process such as memorization and replication.

The profusion of multimodality, however, calls into question this linguistic mode of assessment. The complexity of modality challenges teachers' role in evaluating multimodal processes and products if they are not versed in multimodal practices (Siegel, 2012). Make-shift solutions can be proposed to address the issue of complexity such as developing generic multimodal assessment framework in which attributes of textuality such as coherence, cohesion, information, relationality, and manners can be principally observed (e.g., Hung et al., 2013).



Since such solutions require time to develop a basic framework to address these components, there has been a recent shift of attention.

Multimodality intricacy in line with the speed, volume, and ubiquity of technological innovations, however, has already started to challenge the adoption of those emerging frameworks and principles (Liu, 2014). Understandably, it is infeasible for a teacher to master countless modalities that are respectively presented by learners, simply with regard to time investment. Personalized technologies, applications, and practices further emphasize each individual's desire to continually better their expertise niche. Outsiders and strangers can be advisors but cannot be taken as seriously as they would in the traditional assessment hierarchy.

Adding to these two challenges is diversity of learners and learning, in contrast with the legitimacy aspect discussed in the previous section. Being universally different, not just in their background but also their competence and ways of learning, learners naturally tend to welcome diverse assessment tasks (Jackson, Watty, Yu, & Lowe, 2012). Smith (1863), Darwin (1859), Hayek (1988), and Friedman (2005) have respectively addressed human diversity to argue against the centrally planned economy and institutions such as Keynesianism. Smith's (1863) use of the invisible hand metaphor demarcated a profound recognition of the vast differences among individuals and the impossibility to exhaust their differences. Principally, the degree of impossibility can be escalated as the population of a learning ecology increases. A humble stance is necessary.

Not surprisingly, the central planning framework still presents persistent occupancy in education albeit progressive recognition of diversity over the decades. In inclusive education, for instance, assessment conceptualization is predominantly teaching-centric. Few researchers and practitioners have realized that, apart from advocating for social equity, a serious challenge for teachers is the impracticability of approximating learner's creative niche in the face of the augmented diversity of learners and their learning, not to mention being able to provide guidance for production by way of designated and sometimes prefabricated assessment (Cochran-Smith & Fries, 2011). The inclusive assessment initiative in this regard recognizes the importance of diversity but attend to it with a self-contradictory pedagogical approach.

Given that knowledge archiving and acquisition are digitized and knowledge production is the core, it is vital that assessment concentrates on non-digitizable skills, strategies, and processes involved in creating disciplinary knowledge, as well as on optimizing the environment in which productive spaces are situated (Boud, 2010). These may include, for example, orienting learners to a field of professional practice, assisting them surveying the field, advising on making choices and decisions, encouraging them to take risks, and engaging them in knowledge production adventures. Content is only necessary in times of enacting the process but it is unnecessary as outcomes or as a measure of development over time. More can be added to this list considering educational practitioners' insatiable desire for creativity. Among them, several essential principles require careful attention.

First, teachers' inability to create and assess quality multimodal products should be widely acknowledged. This is neither to shame teachers nor to invalidate the relevance of the profession. Rather it is a revised conceptualization of the millennium old dyadic relationship of teacher-student (Citton, 2010). As previously discussed, current research in the field is dedicated to addressing the issues caused by the profusion of multimodality; e.g., teacher's lack of confidence in implementing multimodal assessment. In this scenario, learners may question the relevance of multimodal assessment to their learning as well as their teachers' competency in modelling their practices. Recognizing teachers' incompetency in production will empower students to value their creativity. It may help remove hierarchy of work relations in emergent productive spaces (Cowen, 2013). By admitting their inability to learners and the public, teachers may be able to liberate themselves from the dyadic deadlock of the teacher-student relationship and collaborate with students to increase team productivity, as Freire suggested.

Second, the legitimacy of the so-called learner and learning-centered approach must be questioned. Regardless of its empowering intention, this approach uncritically sees learners as incompetent and learning as receptive and consuming. Teachers' super gaze upon students' performances is hidden yet omnipresent. Teachers play the big brother role, ready to step in to intervene on presumably appropriate occasions. This deficit approach, falsely viewing learning autonomy as an enculturated entity rather than an innate competence (Kafai & Peppler, 2011), may cause a fictitious perception of empowerment that can result in deep and strong resentment from both teachers and learners. On the teacher's side is a sense of being powerless, as the powerful instructive space that invites their commitment has collapsed whilst the new

productive space is yet to materialize. On the learner's side is a sense of betrayal and even indignation. Whilst confident in steering their own learning, learners are still confined in the old assessment regime to be judged against imposed, artificial criteria.

Retaliation from both sides may reduce the current educational progress to a return to the past, obsolete practices such as the No Child Left Behind legislation (2001) in the United States, the Back to Basics Movement in Australia (Donnelly, 2008) and other countries, and an earnest call to revive handwriting by Timothy Shanahan (2014), a distinguished professor emeritus at the University of Illinois. As such, MEA needs to focus on developing productive spaces as well as facilitating learners' (including teachers') participation in creative spaces. How learners are assessed should be entirely within their sovereignty and should be guided by their desire to create while their equal, if not supreme, position in assessment process and production being legitimized. Learners should be purported to search for the needed information to develop their own social networks and to cultivate their learning communities. The productive model of educational assessment would consistently add to learners' capacity to adapt to the new productive environment.

Third, in learning spaces that center on making and creativity, the role change that has been advocated for teachers should be reexamined (Kafai & Peppler, 2011). One of the main reasons that have prevented teachers' transition from instructors to facilitators, organizers, and assistants is the super gaze inherited from the teacher-centered dominance approach. Teachers, presumably responsible for effective learning and teaching as the provider, explicator, judge, and referee, can become either abusive or delusive as greater authority is invariably loaded with greater pressure and pretension. Moreover, learners can become demotivated by the false autonomy and become reluctant to participate in production when forced to embark on designated assessment tasks or pathways. Finally, the roles that a teacher has to perform in teacher- or learner-centric assessment approaches are beyond single teacher's capacity and can be counter-productive, especially in consideration of today's fast-paced knowledge production cycles.

In learning spaces where participant are expected to be productive (Benton, Mullins, Shelley, & Dempsey, 2013; Peppler & Bender, 2013), the situation can be different. Seen as makers, learners feel responsible for recruiting staff to his or her team. Various teachers with various expertise and experiences are enlisted to contribute to the process of making, mostly as cheerleaders, organizers, or coaches. Cowen (2013), for example, argues that the future employment market will see a prevalence of coaches, mentors, and disciplinarians in many walks of life who can motivate people to improve their lives. Instead of racking their brains to best explicate concepts and evaluate student performance, teachers motivate their students to become more productive, much the same way that sophisticated club managers or coaches do for their professional athletes. A stimulating makerspace co-developed with learners can be used as assessment. Regular get-togethers for sharing ideas at local cafes, parks, or online can be seen as a form of assessment, for instance. The border between teaching, learning, and assessment is perpetually blurred in this regard.

### **Concluding remarks**

The above envisioning of MEA bears no intention of dismissing the significance of multimodality afforded by technology and globalization but to accentuate the necessity of deeper critiques of the current teaching-dominant and learning-centric pedagogical paradigms. Seemingly mutually exclusive, at the core the two paradigms share a hegemonic contempt towards learning participants, knowledge, and productivity. Both have little or no respect for learning participants' desire to create except for being repressive, contemplating, patronizing, and counter-productive. Such contempt might be a justifiable discourse in the pre-industrial period as well as during the Industrialization Era but is counter-productive in times of social media, cloud computing, and ubiquitous connectivity, as has been discussed.

Therefore, it is time that MEA turn to knowledge creation to unleash the productive power rather than being contained, subdued, and even systematically eliminated in the hegemonic discourse of education (Blackmore, Bateman, Loughlin, O'Mara, & Aranda, 2011; Radcliffe, Learning, & Council, 2009). It is important that educators and researchers set out to exploit the new territory of creative space (e.g., Resnick, 2006) and the potential of multimodality in cultivating democratic, transparent, equal, participatory, and emancipatory educational assessment ecologies.



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