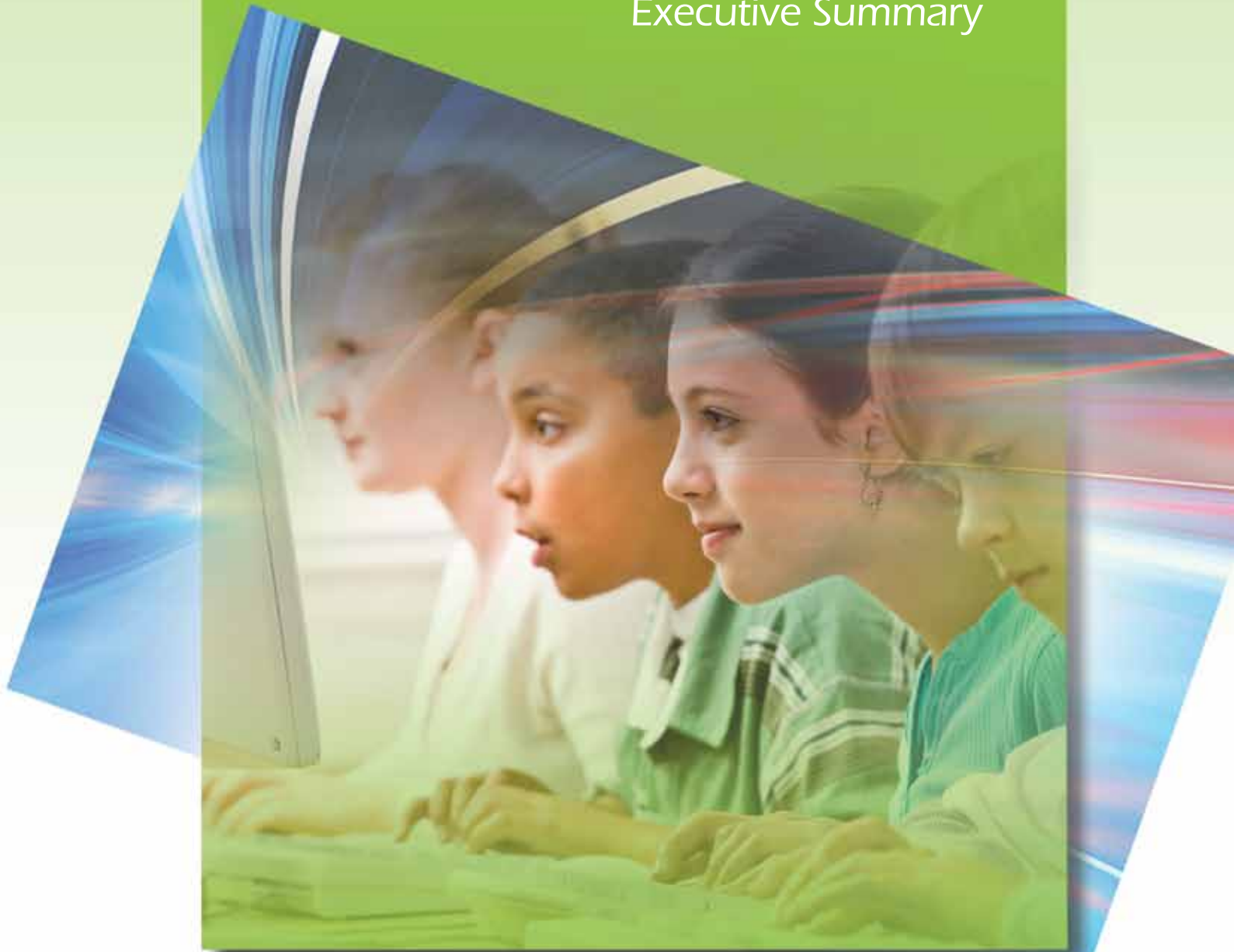


Technical Report  
Executive Summary



To Assess, To Teach, To Learn:  
**A Vision for the  
Future of Assessment**



The Gordon Commission  
on the Future of Assessment in Education

# EXECUTIVE SUMMARY<sup>1</sup>

## Introduction

The experience of thinking aloud in the presence of highly competent colleagues who have been deliberately selected to be one's advisors and critics is at one and the same time a privilege, a challenge, and an inspiration. To have that opportunity at the beginning of one's 10th decade of living, when one has a richly etched tablet on to which to inscribe the meta-productions of that experience, is as unique an experience as is likely to befall most of us who try to make a career of scholarship and service. This report is an account of my having had such an experience and my take on what might well be taken from an inquiry into thought and speculation concerning what is likely to be happening in the education enterprise as we move through the 21st century and, especially, what demands on the field of assessment in education might well be expected.

Educational Testing Service (ETS) has very graciously enabled me to convene scholars and thought leaders of my choosing to advise and challenge me as I have conducted this inquiry. I was honored when friends at ETS suggested that the initiative be called the Gordon Commission, under my chairpersonship. It is with deep appreciation that I acknowledge a personal debt to Kurt Landgraf, President and CEO at ETS, for his decision to support the Commission and me as we inquire into possibilities for the future of assessment in education in the 21st century. There is no way in our reporting to adequately reflect the work involved in conceptualizing, planning, orchestrating, and implementing the contributions and efforts of the estimated 100 persons who have done the work. It is obvious that it is more than the work of a 90-year-old Chairperson. The organizing conceptual and managerial force behind this work is the Gordon Commission's Executive Officer, Paola Heincke. The Gordon Commission carries my name. The Technical Report is my statement endorsed by my Co-chairperson, Professor Jim Pellegrino, but the work of the Gordon Commission has been orchestrated by my associate, Paola Heincke. The Commission members and I are indebted to her.

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<sup>1</sup>This Executive Summary was prepared by Paola Heincke, Executive Officer of the Gordon Commission on the Future of Assessment in Education, based on the content of the Technical Report of the Commission "To Assess, to Teach, to Learn: A Vision for The Future of Assessment." [http://www.gordoncommission.org/publications\\_reports.html](http://www.gordoncommission.org/publications_reports.html)

The Commission was organized early in 2011, as a virtual study group of 30 members and an additional 50 consultants. These excellent human beings have been involved in various ways and degrees of intensity. I have been promiscuous in my search and tapping of the thinking and scholarship of these people. The identifiable contributions of several scholars are included in this Technical Report and are represented in the four-volume collection of the papers that were written as part of the work of the Gordon Commission Knowledge Synthesis Project. This original written work is the substance of my report along with my own commentary on and interpretation of what I have heard and understood as I have tried to use my well-aged mind and about 70 years of informed experience in related activity to make sense of and gain some perspective on what is happening in education, what I sense will happen in the field, and to suggest implications for the future of assessment in education. I have concluded that building upon a long and extraordinary history of achievement in the assessment **OF** education, the future of assessment in education will likely be found in the emerging interest in and capacity for assessment to serve, inform, and improve teaching and learning processes and outcomes. Shall we call that assessment **FOR** education in addition to the assessment **OF** education?

The Technical Report begins with a reprise of the substantive work of the Commission, reflected in what we have called the Knowledge Synthesis Project (KSP). Digests of the several papers and findings drawn from these papers are reported. This work is followed by a summation of Professor Carl Kaestle's essay concerned with the history of assessment in education. Since this history reflects the emphasis in educational measurement that has been placed on the assessment of education, Kaestle's history is complemented by a commentary from the Chairperson on a possible future history, of assessment that is in the service of education. The history and future history of assessment in education introduces two futurist essays, one having to do with shifting epistemologies and changing paradigms and the second concerns what it will mean to be an educated person in the mid-21st century. Three additional essays are included. They address issues related to shifting epistemologies, "Post Modern Test Theory"; "Technological Implications for Assessment Ecosystems"; and a vision of "What Educational Assessment Must Do." These essays are followed by a vision for the future by the Chairman of the Commission, "To Assess, to Teach and to Learn: A Vision for the Future of Assessment," in which I seek to capture ideas and perspectives to which I was exposed in my work with the Gordon Commission. This vision of the future introduces the Recommendations from the Commission, followed by technical information concerning the Gordon Commission and its operations.

I must acknowledge that the work of the Gordon Commission is incomplete. We have initiated discussion and inquiry into possible futures for education and its assessment as we move through the 21st century. We have identified several of the issues that we feel must be addressed as we proceed along this course. We have commissioned several scholars to develop knowledge and thought synthesis papers concerning these issues. We have not had an opportunity to debate and deliberate concerning the findings that are grounded in this work. It will be left to some subsequent forum to seek consensus concerning the meaning of this information for recommended action in the 21st century. This new century will be a period for which we cannot make precise predictions, but we can make the prediction that things will continue to change. The changes this time will be as consequential for human societies as were the introductions of the printing press, mass communication, and industrialization. As best as we can tell, the changes will involve:

- The nature of knowledge and human access to it;
- The quantity and quality of scientific information, its digitization, and its electronic exchange;
- The nature and control of the political economies of the nations of the world; and
- The nature of human social intercourse and the distribution of world populations.

All of these changes will be occurring concurrently. To this dialectical predicament we bring a philosophy of science that rests on the assumptions of the availability of universal principles, consistency and fixity, orderly relations between phenomena, reliability, validity, and veridicality. Some members of the Commission, as do a growing number of scholars, believe that some of these values may be challenged by or may require some accommodation in light of changing ways of thinking about the realities of the future we are beginning to envision.

Already, we see signs of conflict and contradiction between many traditional notions and respected practices in assessment, teaching, and learning, on one hand, and on the other, knowledge and thought that are emerging from new developments in science, technology, and scientific imagination. The Gordon Commission found itself struggling with a set of paradoxes similar to those faced by Columbus and Magellan (i.e., navigating a world that was known to be flat at a time when the evidence was beginning to indicate that the world is round). How do we operate in a system that we have come to know from a positivist science, but are beginning to understand will require a contextualist and

relativist science? From this growing sense of chaos, the members of the Gordon Commission have been trying to make sensible judgments and speculations concerning the future of assessment in education.

A handwritten signature in black ink that reads "Edmund W. Gordon". The signature is written in a cursive, slightly slanted style.

Edmund W. Gordon

Chairperson

Gordon Commission on the Future of Assessment in Education

# 1. Critical Issues for the Future of Assessment in Education

In the initial meeting of the Gordon Commission, attention turned to questions having to do with why we assess, what we assess, and how we assess in education now and in the future. The members of the Commission quickly agreed that the answers to these questions should form the context for our inquiry into the future of assessment. One of the initial activities of the Gordon Commission involved the identification of what Commissioners agreed were the most critical issues facing the field. It was thought that the encirclement of extant knowledge and thought concerning these issues should inform the work of the Gordon Commission as it inquired into the current state of assessment in education, the best of extant theory and practice, and our understanding of the changing nature of education and its assessment in the present and anticipated future.

This decision led to the conduct of the central activity of the Gordon Commission that has been referred to as the Knowledge Synthesis Project. This initiative consisted of the commissioning of 25 reviews of extant knowledge and thought concerning the issues that were identified as most important. The papers that resulted from this work are listed in this report. These papers will be published in a four-volume series, *Perspectives on the Future of Assessment in Education*. Under the guidance of our two senior research associates, Rochelle Michelle, Ph.D., and Ernest Morell, Ph.D., these papers written especially for the Gordon Commission were subjected to analysis and digest by six emerging scholars who served as pre- and post-doctoral Commission Fellows.

## Developing Perspectives on Assessment

The papers contained within this section (Kaestle, 2012; Meroe, 2012; Varenne, 2012; Mendoza-Denton, 2012; Dixon-Román & Gergen, 2012; and Gergen & Dixon-Román, 2012; Torre & Sampson, 2012; Bennett, 2012) all provide varying views on the historical context for assessment, ranging from testing policies to measurement models used in testing.

## Accountability and Validity Frameworks

The papers within this section (Linn, 2012; Mislavy, 2012; Gorin, 2012; and Ho, 2012) discuss the evolving uses of tests and the need to consider assessment frameworks that take into consideration the current and potential uses of tests in the context of the teaching, learning, and assessment process. In addition, these papers challenge the testing industry to develop assessment systems that can capture evidence of student learning

at multiple time points, from different sources (i.e., inside and outside of school settings), different types (i.e., quantitative and qualitative), and that allow for the demonstration of student learning in different ways.

### Beyond the Basics

While current large-scale, standardized tests focus on the basic skills of reading, writing, and mathematics, and to a lesser degree science and history, the next set of papers (Bereiter & Scardamalia, 2012; Cauce & Gordon, 2012; Armour-Thomas & Gordon, 2012; and Baker, 2012) call for a movement to go beyond these basics and consider a wider range of competencies. In addition, these papers support a more integrated approach for instruction, curriculum, and assessment that support student learning and allow students to move beyond the basics that are learned and transfer that knowledge to other contexts beyond the one in which the original knowledge was learned. These papers also highlight the importance of collaboration and acknowledging the varying social contexts in which students learn.

### Lessons Learned from Testing Special Populations

While the papers within this section (Hakuta, 2012; Thurlow, 2012; and Boykin, 2012) address specific populations of students (i.e., English language learners and students with disabilities), their view of assessment questions the current way in which groups are identified to receive alternate assessments or receive accommodations in testing. The papers consider how some of the accommodations may be helpful to learners beyond those that have been identified as having a disability (e.g., Universal design) or those who may be English language learners (e.g., bilingual class for English language learners and native speakers of English).

### Technology as a Tool to Advance Assessment

The papers within this section (Hill, 2012; Chung, 2012; and Behrens & DiCerbo, 2012) highlight how developments in technology allow for the development of more advanced, more comprehensive assessment systems that can provide varying levels of data to inform the teaching, learning, and assessment process. Specifically, technology will allow for the collection and management of fine-grained data throughout the teaching, learning, and assessment process that can be used to monitor and inform student learning.

## 2. A History of the Assessment of Education and a Future History of Assessment for Education<sup>2</sup>

The purpose of Kaestle's (2012) essay is to reflect on the development of modern testing practices in a historical context. This can spur ideas on how to shape assessments to fit our 21st-century values. We have a long and distinguished experience with the use of assessment, measurement, and testing in the history of education. That history is marked by a heavy emphasis on the assessment of education through testing and the measurement of the status of one's developed ability and achievement. Rich bodies of theory and practice have been established and are currently used in the service of accountability, selection, and certification. It was also noted that there are some equity and accountability goals that have been well-served by being able to pinpoint how well individual students or groups of students are doing. Kaestle also acknowledges the power of standardized, multiple-choice tests due to their cost effectiveness and efficiency compared to the more complex, more subjective and higher-level assessments. These positive qualities of standardized, multiple-choice tests stand in the way of the call for authentic and performance-based assessments that challenge existing frameworks.

The claim is advanced that some of the embodied perspectives may be outdated and dysfunctional to the needs of education in the 21st century. The Gordon Commission has embraced a parallel concern as we move through the 21st century, in which it promotes as a primary emphasis on assessment for education through the collection and interpretation of a variety of forms of evidence in the service of the disconfirmation of inferences drawn to explain, inform, and improve teaching and learning processes and outcomes. The future history of assessment in education is projected to be a history in which the best features of assessment of education will be conjoined with emerging features of assessment for education to inform and improve teaching and learning.

## 3. The Changing Context for Education and its Assessment – Edmund W. Gordon

Increasingly, the goals of education reflect the growing concern with encouraging and enabling students to learn how to learn and to learn to continue learning; to become

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<sup>2</sup>Abstracted from Kaestle, C., 2012, *Testing Policy in the United States: A Historical Perspective* and amended by Edmund Gordon. [http://www.gordoncommission.org/rsc/pdfs/kaestle\\_testing\\_policy\\_united\\_states.pdf](http://www.gordoncommission.org/rsc/pdfs/kaestle_testing_policy_united_states.pdf)



enquiring persons who not only use knowledge but persons who produce and interpret knowledge. The pedagogical challenge will be less concerned with imparting factual knowledge and more concerned with turning learners on to learning and the use of their mental abilities to solve ordinary and novel problems. Reading, wRiting, and aRithmetic will continue to be essential skills but thought leaders in education, such as Sir Kenneth Robinson, increasingly point to varying combinations of “Cs” as essential processes in education. Creativity and innovation; Conceptualization and problem solving; Commu- nication and collaboration; and Computer literacy. The Cs are replacing the “Rs” as the modern ends toward which education is directed. Learning how to think critically and creatively, reason logically, interpret relationally, and to access and create knowledge will be more and more privileged in the 21st century.

Education and its assessment will have to become capable of capturing aspects of context, perspective, and the attributions which come to be assigned to these conditional phenomena. The exactness and precision which have been gained by decontextualization in the past will be challenged by the situative and existential sensitivities required when contextualism and perspectivism are required for understanding as well as knowing.

Yet, modern social and psychological sciences are pressing us to examine or assess human performance with greater respect for the influence of affective, emotional, situative, and social processes. Evidence mounts in support of the fact that these processes influ- ence the character and the quality of human performance, yet they are these instances of objectively documented human performance that are the source of the data of traditional assessments in education. However, assessment in education in the future will have to be more sensitive to subjective phenomena (i.e., to affect, attribution, existential state, emotion, identity, situation, etc.), as will the teaching and learning transactions in which learners are engaged.

Pressure mounts from the profession and the practicalities of educational praxis for better information to inform intervention prior to the search for better information by which to determine how well we are doing. We have known for more than a century that what we do in education is imprecise; that one model does not fit all; and that much of our intervention is under-analyzed trial and error. We believe that assessment in education can and should inform and improve teaching and learning processes and outcomes, without ignoring the importance of accountability. Whether the two purposes can be served concurrently and by the same assessment instruments and systems is one of the questions to be answered.

Humans will very likely continue to create technologies that make their work easier and that amplify and expand human abilities. Some of these, as with artificial intelligence inventiveness, could change the importance of some of the competencies for which we currently educate or, more likely, will exacerbate the need for other functions that we currently know less about enabling (i.e., agency, disposition, relational adjudication). The human ability-amplifying technologies may make some of our educational tasks easier, but they may also create monumental challenges and opportunities for the people who are responsible for assessing, teaching, and learning in some well-orchestrated manner.

## 4. To Be an Educated Person in the 21st Century – Carl Bereiter and Marlene Scardamalia

Bereiter and Scardamalia consider the ways in which the intellectual demands on educated persons will change in this century. Attention is called to the increasing limitations of knowledge mastery in the absence of knowledgeability in a knowledge-based society. Emphasis is given, however, to the importance of knowledge repertoire and its role as a basis for relating new chunks of knowledge. They emphasize the growing demand for the capacity for adaptability and disposition to exercise agency. Their emphasis on aspects of character seems to have increasing currency. All of these concerns are addressed in the context of tremendous technological advances that will continue to affect the field of education.

Bereiter and Scardamalia (2012) identified five competencies: a) Knowledge creating where students are able to build, amend, and create knowledge; b) Working with abstractions where students should be able to work with abstraction and convert them to real-world applications, going from the theoretical to the practical; c) Systems thinking where students should be able to recognize and understand the complexity of the world and consider how to take advantage of the complexity whenever possible; d) Cognitive persistence where students should be able to sustain focus and study in the face of increasing obstacles and distractions; and e) Collective cognitive responsibility where students should be able to engage in collective work that is collaborative.

The authors recognize that as theories of collaborative learning develop, learners should be given instructional space to collaborate, and assessment should adapt so that individual and collaborative contributions to solving problems may be measured and evaluated. They recommend preparing learners to engage in lifelong learning, enabling learners to gain new competencies, while adapting to the accelerating pace of change. Part of this

will require education to foster breadth, depth, and the ability to navigate diverse ideas, people, and culture. To this end, assessments should be developed that foster creativity. Bereiter and Scardamalia (2012) also call for systems thinking where students are able to both discern usefulness of knowledge and place knowledge within the appropriate context. The authors also recommend developing methods for assessing knowledge creation, work with abstractions, systems thinking, cognitive persistence, and collaborative responsibility.

## 5. Postmodern Test Theory<sup>3</sup> – Robert J. Mislevy

Mislevy addresses concerns that are prevalent throughout the work of the Commission relative to the influence of changes in contemporary conceptions of the nature of knowledge and the role of knowledge and knowing in intellectual functions. The growing concern for context, perspective, and situated meaning that is associated with postmodern talk constitutes a possible challenge to education and to its assessment. This paper, and at least two others, capture the Commission's concern with the tensions between the positivist traditions that have shaped measurement and the post-positivist and "neopragmatic postmodernist test theory" that seem to be more appropriate to 21st-century conceptions of assessment in education. The stark contrast between formal and informal assessment arises because to understand students' learning and further guide it, teachers need information intimately connected with what their students are working on, and they interpret this evidence in light of everything else they know about their students and their instruction. The power of informal assessment resides in these connections. Good teachers implicitly exploit the principles of cognitive psychology, broadening the universe of discourse to encompass local information and address the local problem at hand. Yet precisely because informal assessments are thus individuated, neither their rationale nor their results are easily communicated beyond the classroom. Standardized tests do communicate efficiently across time and place — but by so constraining the universe of discourse that the messages often have little direct utility in the classroom. The challenge now facing neopragmatic postmodern test theory is to devise assessments that, in various ways, incorporate and balance the strengths of formal and informal assessments by capitalizing on an array of methodological, technological, and conceptual developments.

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<sup>3</sup>Postmodern Test Theory (Robert J. Mislevy) is Reprinted with permission from *Transitions in Work and Learning: Implications for Assessment, 1997*, by the National Academy of Sciences, Courtesy of the National Academies Press, Washington, DC.

## 6. Technological Implications for Assessment Ecosystems – John Behrens and Kristen E. DiCerbo

The Behrens and DiCerbo (2012) paper, *Leverage Points for “Natural” Digital Activities in the Assessment of Human Attributes*, describes three core aspects of technological developments that can be used for educational assessment: a) Computers can be used to enhance human capabilities given computers’ ability to store, process, and mine large amounts of fine-grain data from multiple sources; b) The increased use of digital technologies makes it possible to gather new forms of data based on human interaction in digital environments; and c) Digital technologies can be used to better visualize the fine-grain data so that observations, patterns, and inferences can be made based on the data. These new technologies should allow new insights into student learning using computational methods of storing, analyzing, and modeling student data. Behrens and DiCerbo (2012) recommend a reframing of assessment practices from identifying correctness of test questions to capturing a constellation of learning transactions using digital technologies to make inferences about student cognition and learning.

## 7. Preparing for the Future: What Educational Assessment Must Do – Randy E. Bennett

This essay explores the forms that summative and formative assessments will take and the competencies that they will measure in the future. Education, and the world for which it is preparing students, is changing quickly. Educational assessment will need to keep pace if it is to remain relevant. This paper offered a set of claims for how educational assessment might achieve that critical goal. Many of these claims are ones to which assessment programs have long aspired. However, meeting these claims in the face of an education system that will be digitized, personalized, and possibly gamified will require significantly adapting, and potentially reinventing, educational assessment. Our challenge as a field will be to retain and extend foundational principles, applying them in creative ways to meet the information and decision-making requirements of a dynamic world and the changing education systems that must prepare individuals to thrive in that world.

The author proposes a set of 13 claims about what educational assessment must do if it is to remain relevant and if assessment is to actively and effectively contribute to individual and institutional achievement. The author notes that in order for assessment systems to remain relevant, future educational assessment systems will need to provide trustworthy and actionable summative information for policymakers as well as formative information

for teachers and students. He has identified the need for assessments that serve multiple purposes. However, a single test may not be able to meet the needs beyond which the assessment was originally developed. It may be the case that an assessment developed for multiple purposes may not work for any of the identified purposes. According to Bennett, assessment for education must:

- Provide meaningful information
- Satisfy multiple purposes
- Use modern conceptions of competency as a design basis
- Align test and task designs, scoring, and interpretation with those modern conceptions
- Adopt modern methods for designing and interpreting complex assessments
- Account for context
- Design for fairness and accessibility
- Design for positive impact
- Design for engagement
- Incorporate information from multiple sources
- Respect privacy
- Gather and share validity evidence
- Use technology to achieve substantive goals

## **8. To Assess, To Teach, To Learn: A Vision for the Future of Assessment in Education** – Edmund W. Gordon<sup>4</sup>

This section of the Technical Report is bi-focal. It provides the insight of Edmund W. Gordon, Chairperson of the Gordon Commission, into the substantive work of the Commission as reflected in 25 essays that were written for the synthesis of knowledge and thought that informed its work. The essays range from several that are concerned with various perspectives on assessment in education and their meanings; problems associated with accountability, reliability, and validity as frameworks for assessment; and the notion of assessment as evidential reasoning. In other essays, attention is directed at changing and persistent targets of assessment having to do with just what it is that we assess; lessons learned from assessment in the education of diverse cultural groups and special populations; and the implications of emerging developments in science, technol-

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<sup>4</sup>The author acknowledges with deep appreciation the editorial and research assistance of Emily B. Campbell, Paola C. Heincke, and Paola A. Valencia in the preparation of this commentary.

ogy, and scientific imagination for education and its assessment. The assessment enterprise in education will become an educative service concerned with informing and improving teaching and learning and modeling the adaptive, intellectual, and learning behaviors that exemplify the intended outcomes of education.

Why do we assess? We assess in order to better understand the people we teach, the processes by which we teach them, the situations in which they learn or fail to do so, and to enhance their intellectual character and competence. What then might well be the characteristics of systems of assessment in education that embrace assessment, teaching, and learning as privileged processes? Gordon's preferred candidates for assessment capacity and practice by mid-21st century are:

- A system of inquiring assessment probes embedded in teaching and learning transactions. There are at least three ideas included in this proposal: a) Gradual replacement of stand-alone tests with systems of assessment (multiple and varied assessment opportunities), which are distributed over time and throughout the teaching and learning transaction; b) The integration of assessment probes as instruments of inquiry, instruction, and mediation; c) Separate responsibility for the use of data drawn from rich descriptions of these transactions for administrative and for student development purposes. Teachers would be enabled to interpret these data diagnostically and prescriptively. Psychometricians would be responsible for distilling from these in vivo learning and teaching transactions data needed for accountability.
- The integration of assessment with teaching and learning will demand a view of assessment as diagnostic inquiry, exploratory mediation, and intensive accountable exchange ("accountable talk" to use Resnick's term). There is a rich history of the use of questioning as a part of instruction. Good teachers know the art of posing questions that stimulate thought (Socratic dialogue) as well as probing for evidence of status or process. Most good teachers do not depend solely on standardized tests to know where their students are and what they need. Whimby (1980) makes extensive use of exploratory mediation through which teacher and student inquiry are used in the search for explication of meaning and processes utilized. In the integration of assessment with teaching and learning, the unique character of each of these processes may be lost, as each serve functions that can be interchanged with the other.
- The unbundling and explication of the cognitive demands of knowledge and technique mastery. What is the cargo of transfer learning? Gordon gives extensive discussion to his concern for the complementarities between the worlds of knowledge and technique

on one hand, and developing mental capacities on the other. He also discussed the possibilities for distilling from the items of standardized test clearer indices to the cognitive demands of test items. In this approach, he recognizes the importance of knowledge content in teaching and learning, but argues that the mastery of such content may be less important than is the achievement of intentional command of the mental abilities that (1) have been developed in the course of the study of this content, and (2) are essential to the processing of information represented knowledge and technique.

- Modern information technologies afford student access to almost limitless quantities and varieties of information resources. Competence in accessing and utilizing available resources could replace the more traditional privileging of memory store. Assessment and education by mid-21st century will be capable of documenting and determining the status of one's competence in determining resource need, accessing needed resources, help seeking, and the utilization of these resources.
- Distance learning and the use of epistemic games have already reached epidemic levels among age groups of learners under 30. Current predictions suggest continued growth in the use of these educative and recreational media. The almost colloquial anticipation is that this genre of electronic digital information exchange carries with it a trove of information that can be used for educational purposes. In the near future such information will be distilled from the records of these transactions, even as the genre gains in sophistication relative to its capacity to generate useful information. The assessment challenge will be the systematization of relevant indicators as well as the data distillation techniques utilized.
- The author describes the digital and electronic technologies as amplifiers of human abilities and recognizes that these technologies do not simply enhance the existing human abilities; they appear to have the potential for creating new human capacities. Future assessments in education will need to be capable of documenting human abilities in their amplified state as well as these newly emerging human capabilities. Even at this time we can anticipate increasing demands for abilities that relate to adaptation to randomization: pattern recognition and generation of patterns; rationalization of contradictions; the adjudication of relational paradoxes; and the capacity for virtual problem solving.
- In the 20th century, testing and measurement of developed abilities dominated assessment. In the 21st century, assessment for the development of human capacities will be the demand. Assessments in that new age will need to be diagnostic,

prescriptive, instructive, and capable of documenting what exists — capturing the processes by which abilities are developing and modeling the achievements that are the ends of assessment, teaching, and learning. Assessments will continue to be conducted and interpreted by the professionals others, but assessment will also be ubiquitously conducted by oneself and layperson others, in what Torre & Sampson (2012) describe as cultures of assessment, where evidentiary reasoning will become a colloquial basis for action, based on data that are ubiquitously generated in commerce, in life, in play, in study, and in work.

- In most of the work of the Gordon Commission there is elaborated an essentially epistemological rationale for new directions in our approach to assessment, but there is also a deontic rationale, which may be even more powerful than the epistemological. If the intent in assessment in education is to inform and improve teaching and learning, the moral obligation is to generate, interpret, and make available the relevant evidence that is necessary for intervention as action on this enabled understanding.

## 9. The Findings and Recommendations of the Gordon Commission

The members of the Gordon Commission have not met formally to deliberate concerning findings and recommendations that can be drawn from the work of the Commission. The Co-chairpersons of the Commission, however, have agreed on the following conclusions on findings and recommendations that are grounded in the consultations, deliberations, and commissioned papers conducted by the Gordon Commission. Edmund W. Gordon and James W. Pellegrino have concluded that the findings and recommendations of the Commission can be summarized as follows:



## Nature of Assessment

1. Assessment is a process of knowledge production directed at the generation of inferences concerning developed competencies, the processes by which such competencies are developed, and the potential for their development.
2. Assessment is best structured as a coordinated system focused on the collection of relevant evidence that can be used to support various inferences about human competencies. Based on human judgment and interpretation, the evidence and inferences can be used to inform and improve the processes and outcomes of teaching and learning.

## Assessment Purposes and Uses

3. The Gordon Commission recognizes a difference between a) assessment **OF** educational outcomes, as is reflected in the use of assessment for accountability and evaluation, and b) assessment **FOR** teaching and learning, as is reflected in its use for diagnosis and intervention. In both manifestations, the evidence obtained should be valid and fair for those assessed and the results should contribute to the betterment of educational systems and practices.
4. Assessment can serve multiple purposes for education. Some purposes require precise measurement of the status of specific characteristics while other purposes require the analysis and documentation of teaching, learning, and developmental processes. In all cases, assessment instruments and procedures should not be used for purposes other than those for which they have been designed and for which appropriate validation evidence has been obtained.
5. Assessment in education will of necessity be used to serve multiple purposes. In these several usages, we are challenged to achieve and maintain balance such that a single purpose, such as accountability, does not so dominate practice as to preclude the development and use of assessments for other purposes and/or distort the pursuit of the legitimate goals of education.

## Assessment Constructs

6. The targets of assessment in education are shifting from the privileging of indicators of a respondent's mastery of declarative and procedural knowledge, toward the inclusion of indicators of respondent's command of access to and use of his/her mental capacities in the processing of knowledge to interpret information and use it to approach solutions to ordinary and novel problems.
7. The privileged focus on the measurement of the status of specific characteristics and performance capacities, increasingly, must be shared with the documentation of the processes by which performance is engaged, the quality with which it is achieved, and the conditional correlates associated with the production of the performance.
8. Assessment theory, instrumentation, and practice will be required to give parallel attention to the traditional notion concerning intellect as a property of the individual and intellect as a function of social interactions — individual and distributive conceptions of knowledge — personal and collegial proprietary knowledge.
9. The field of assessment, in education will need to develop theories and models of interactions between contexts and/or situations and human performance to complement extant theories and models of isolated and static psychological constructs, even as the field develops more advanced theories of dialectically interacting and dynamic bio-social behavioral constructs.
10. Emerging developments in the sciences and technologies have the capacity to amplify human abilities such that education for and assessment of capacities like recall, selective comparison, relational identification, computation, etc. will become superfluous, freeing up intellectual energy for the development and refinement of other human capacities, some of which may be at present beyond human recognition.

## Assessment Practices

11. The causes and manifestations of intellectual behavior are pluralistic, requiring that the assessment of intellectual behavior also be pluralistic (i.e., conducted from multiple perspectives, by multiple means, at distributed times, and focused on several different indicators of the characteristics of the subject(s) of the assessment).
12. Traditional values associated with educational measurement, such as reliability, validity, and fairness, may require reconceptualization to accommodate changing conditions, conceptions, epistemologies, demands, and purposes.

13. Rapidly emerging capacities in digital information technologies will make possible several expanded opportunities of interest to education and its assessment. Among these are:
  - a. Individual and mass personalization of assessment and learning experiences;
  - b. Customization to the requirements of challenged, culturally and linguistically different, and otherwise diverse populations; and
  - c. The relational analysis and management of educational and personal data to inform and improve teaching and learning.

## RECOMMENDATIONS DRAWN FROM THE WORK OF THE GORDON COMMISSION

The members of the Commission recognize that the future of assessment will be influenced by what the R&D and the assessment production communities generate as instruments and procedures for the assessment in education enterprise. However, we are very much aware that equally determinative of the future will be the judgments and preferences of the policymakers who decide what will be required and what practitioners and the public will expect. In recognition of the crucial role played by policymakers, the Executive Council of the Gordon Commission has given special attention to the development of a policy statement that concludes with three recommendations directed at those who make policy concerning education and its assessment. The statement has been prepared by James Pellegrino, Co-chair of the Commission, and Lauren Resnick, member of the Executive Council, with input from Sharon Lynn Kagan, consultant to the Chair, and other members of the Executive Council — Randy E. Bennett, Eva Baker, Bob Mislevy, Lorrie Shepard, Louis Gomez, and Edmund W. Gordon — and the assistance of Richard Colvin as writing consultant.

This public policy statement represents the authors' sense of recommendations that are implicit in the work of the Commission. However, it has not been vetted by the members of the Gordon Commission and thus it should not be concluded that any given member of the Commission endorses the specifics included herein.

### **A Statement on Public Policy Concerning the Future of Assessment in Education**

The Gordon Commission on the Future of Assessment in Education was created to consider the nature and content of American education during the 21st century and how assessment can be used most effectively to advance that vision by serving the educational and informational needs of students, teachers, and society. The Commission's goal in issuing this brief public policy statement is to stimulate a productive national conversation about assessment and its relationship to teaching and learning at a time when developments in assessment and education in the United States present a remarkable opportunity to reconceptualize the purposes of educational assessments.

The statement advances arguments for:

1. Transforming Assessment to Support Teaching, Learning, and Human Development
2. Reconsidering Assessment: Why, What, and How We Assess
3. Moving Forward: The Opportunity

## Recommendations Concerning Public Policy

### In the Realm of State Collaboration and Policy

It is recommended that states create a permanent Council on Educational Assessments modeled on the Education Commission of the States with functions such as:

- Evaluate the strengths and weaknesses of the Smarter Balanced and PARCC assessment systems and their effect on teaching and learning.
- Conduct research on how assessments are changing, help inform states so that they make good purchasing decisions, and surface issues as they arise. The Council also would oversee the process of setting cross-state performance level targets.
- Mount a public education campaign targeting parents, educators, school board members, and the media explaining the importance of good assessment to quality education.
- Create a Study Group on the Challenges of Equitable Assessment to explore issues related to diversity, equity, and excellence.
- Commission research on policies designed to secure the privacy of assessment data, while also creating protocols for making large quantities of such data available to qualified researchers.

### In the Realm of Federal Policy

It is recommended that the President and Congress build on various models to encourage experimentation with different approaches to assessment and accountability.

### In the Realm of National Research and Development

It is recommended that the U.S. Department of Education, the Department of Defense, the National Science Foundation, and the National Institute of Child Health and Human Development — in collaboration with the philanthropic community, not-for-profit and for-profit sector, professional teacher organizations, and universities — commit to a 10-year research and development effort to strengthen the capacity of the U.S. assessment.

## General Recommendations Concerning the Future of Assessment in Education

1. As is traditional in the medical profession and is rapidly embraced as a guide for all professional activity, the recommendation is made that in assessment policy, practice, and use of assessment data, this field should “first do no harm.” Responsibility for honoring this value falls at multiple levels — policymakers, administrators, staff and perhaps most heavily on the manufacturers of assessment devices and those of us who sell them (see Ho’s paper on purpose drift).
2. We could declare as consensus among the members of the Commission that assessment can serve multiple purposes. There is less agreement concerning the possibility that a single test should be so used, however, the consensus holds concerning the need for balance in the attention given to the use of assessment for different purposes. It is recommended that with the possible exception of “informing and improving teaching and learning,” no single purpose should be permitted to distort the valued goals of education. Similarly, it is recommended that fidelity to the purpose for which the instrument or procedure is designed be honored. This recommendation references, among other concerns, the difference between our traditional concern with assessment of education and the Commission’s emphasis on assessment for education.
3. Assessment in education is essentially grounded in inferential reasoning. It is a process by which evidences collected for the purpose of the disconfirmation of inferences one seeks to make concerning the phenomena being assessed. It is therefore recommended that assessment processes be held to standards similar to those long honored in the tradition of the empirical sciences. However, given the Commission’s concern for changing paradigms and shifting epistemologies, it is further recommended that the universal utility of positivist scientific methodologies as a standard for evolving assessment practices be subjected to continuing inquiry.
4. We believe that most members of the Commission embrace concern for differential validities (i.e., the idea that validity may be a relative construct, and that its relativity must be taken into account in policy-making and practice with respect to assessment in education). It is therefore recommended that the field embrace the notion of differential validities and the imperative that tests of validity be appropriate to the populations and situations in which the construct is being utilized.

5. It is recommended that research and development efforts be intensified around questions related to the implications for assessment in education that flow from questions related to the cargo of learning transfer. Special attention may need to be given to the complementarities between mastery of declarative and procedural knowledge and the intentional command of instrumental mental processes.
6. It is recommended that the targets of assessment in education be broadened to include a wider range of human abilities, ways of adaptation, amplified abilities, and human capacities, including those that are the products of exposure to digital electronic technologies.
7. Given the considerable evidence in support of agency, disposition, cultural identities, and existential states as influences on the nature and quality of human performance, it is recommended that research and development concerning the relationships between human performance and these variables be given considerably greater priority in inquiries concerning assessment in education.
8. Debate continues concerning the idea that intelligence is a characteristic of individuals, intelligence is a collectively produced construct best associated with social groups, and the idea that intelligence originates and is expressed in both contexts. The increased practice of collaboration in the production of knowledge and its application suggests the importance of our recommendation that research and development effort be directed at differentiating assessments to capture intellectual competence as a property of individuals and as a function of collaboration between persons.
9. Considerable concern has been expressed in the Commission about the artificiality of “Stand-alone” or “Drop in from the Sky” tests. Perhaps more problematic than the isolated character of these examinations is concern with the tendency to treat the data from these tests as independent and sole sources of information concerning the performance and status of students. Some Commissioners argued for the greater use of systems of examinations distributed over time embedded in the ongoing teaching and learning of experiences. It is recommended that assessment in education move progressively toward the development and use of diversified assessment systems for the generation and collection of educational assessment data.
10. It is then the final recommendation, implicit in the work of the Gordon Commission, that the academic and philanthropic sectors of the society — cooperatively

supported by tax levy funds, consider the creation of a Virtual Institute on the Future of Assessment in Education (VIFAE) to continue the inquiry initiated by the Gordon Commission; to encourage broad and cross disciplinary collaboration in this work; and to support the attraction to and development of young and new scholars to conceptual research and development explorations of the relationships between assessment, teaching, and learning.

## 10. About The Gordon Commission on the Future of Assessment in Education

### Commission Background

Conceptions of what it means to educate and to be an educated person are changing. Notions of and demands on practice in the teaching and learning enterprise are broadening and expanding. And the concern with accountability forces this dynamic and eclectic enterprise to constrict and, in the worst of instances, to compromise in the interest of meeting certain accountability criteria. These realities, coupled with changes in epistemology, cognitive, and learning sciences, as well as in the pedagogical technologies that inform teaching and learning, are narrowing — possibly even stifling — creativity and flexibility in teaching and learning transactions. These are among the perceived problems that led to the creation of the Gordon Commission on the Future of Assessment in Education by Educational Testing Service in January 2011.

Although these immediate issues were foundational in the establishment of the Gordon Commission, a second more compelling contextual problem helps to drive its mission. Changing conceptions of and practices in educational assessment are making many of the capabilities of traditional conceptions and practices in educational assessment obsolete. The work of the Commission rests on the assumption that assessment in education can inform and improve teaching and learning processes and outcomes.

### Mission of the Commission

The Gordon Commission was created with the mission to study the best of educational assessment policy, practice, and technology; consider the best estimates of what education will become and what will be needed from educational measurement during the 21st century; and generate recommendations on educational assessment design and application that meet and/or exceed the demands and needs of education — present and predicted.



Given the mission of the Gordon Commission, a number of goals were outlined that focused the work of the Commission. The goals of the Gordon Commission are to:

- Inform the field and the public about the need and possibilities for change in education, as well as change in the functions, practices, and roles of assessment in education;
- Increase public awareness and knowledge about assessment as an integral component of education and the possibilities for change in assessment practice;
- Encourage the field of educational assessment to strengthen its capacity to factor into measurement practice attention to the influence of human attributes, social contexts, and personal identities on human performance;
- Balance emphasis on prediction, selection, and accountability with equal concern for informing and improving teaching and learning processes and outcomes; and
- Inform long-term planning and product development in the field of psychometrics.

## Commission Members

The Gordon Commission consists of 30 members. The scholars, policymakers, and practitioners who comprise the Commission have identified critical issues concerning educational assessment, investigated those issues, and developed position and review papers that informed the Commission's recommendations for policy and practice in educational assessment.

### Chairman

#### **Edmund W. Gordon**

John M. Musser Professor of Psychology, Emeritus

Yale University

Richard March Hoe Professor of Education and Psychology, Emeritus

Teachers College, Columbia University

### Co-Chair

#### **Jim Pellegrino**

Liberal Arts & Sciences Distinguished Professor

Distinguished Professor of Education

Co-Director, Learning Sciences Research Institute

University of Illinois at Chicago

## Executive Council

### **Eva Baker**

Distinguished Professor, Graduate School of Education and Information Studies, and Director, National Center for Research on Evaluation, Standards, and Student Testing, University of California, Los Angeles

### **Randy E. Bennett**

Norman O. Frederiksen Chair in Assessment Innovation, Educational Testing Service (ETS)

### **Louis M. Gomez**

MacArthur Foundation Chair, Digital Media and Learning, Graduate School of Education & Information Studies, University of California, Los Angeles

### **Robert J. Mislevy**

Frederic M. Lord Chair in Measurement and Statistics, ETS

### **Lauren Resnick**

Senior Scientist, and Project Director, Learning Research and Development Center, and Distinguished University Professor of Psychology and Cognitive Science, University of Pittsburgh

### **Lorrie A. Shepard**

Dean, School of Education, and Professor of Education, University of Colorado at Boulder

## Commissioners

### **J. Lawrence Aber**

University Professor and Albert and Blanche Willner Family Professor of Psychology and Public Policy, Department of Applied Psychology, Steinhardt School of Education, New York University (NYU)

### **Bruce M. Alberts**

Professor, Department of Biochemistry and Biophysics, University of California, San Francisco, and Chief Editor, *Science Magazine*

### **John Bailey**

Director, Dutko Worldwide

### **John T. Behrens**

Vice President, Pearson Center for Digital Transformation

**Ana Mari Cauce**

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**Linda Darling-Hammond**

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**James Paul Gee**

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**Kenji Hakuta,**

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**Frederick M. Hess**

Resident Scholar and Director of Education Policy Studies, American Enterprise Institute for Public Policy Research

**Andrew Ho**

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**Freeman A. Hrabowski III**

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**Michael E. Martinez (1956–2012)**

Professor, Department of Education, University of California, Irvine

**Rodolfo Mendoza-Denton**

Associate Professor, Psychology Department, University of California, Berkeley

**Shael Polakow-Suransky**

Chief Academic Officer and Senior Deputy Chancellor, New York City Department of Education

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**Charlene Rivera**

Research Professor, and Executive Director, Center for Equity and Excellence in Education, The George Washington University

**Lee Shulman**

President Emeritus, The Carnegie Foundation for the Advancement of Teaching, and Charles E. Ducommun Professor of Education–Emeritus, School of Education, Stanford University

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**Claude Steele**

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- Editorial Assistant: **Maralin Roffino**  
Assistant to the Director of Communications  
SUNY Rockland Community College

## WORK OF THE COMMISSION

### Meetings of the Commission

There were two face-to-face meetings of the Gordon Commission. The initial meeting was held May 24–25, 2011, at the Chauncey Conference Center in Princeton, N.J., and the second meeting was held February 12–13, 2012, at the Caribe Hilton in San Juan, Puerto Rico.

### Consultative Conversations

The Gordon Commission spent much of its first year gathering and synthesizing information and perspectives concerning the state of the art and sciences of educational measurement and assessment. The Chairman and members of the Commission have held individual consultations with experts around the country who provide input into the work and the direction in which the Commission is going. The Commission hosted more than a dozen consultative conversations with groups that advised the Commission on the identification of issues that need to be addressed and the substance of the issues to be considered.

### The Gordon Commission Fellows

The Gordon Commission Fellows is a dynamic group of six emerging pre- and post-doctoral scholars in the fields of the learning sciences, anthropology, psychometrics, the sociology of education, and education technology. These Fellows were assembled to analyze and identify emergent themes, critical innovations, similarities and distinctions, and ultimately synthesize the knowledge produced across the body of the commissioned papers in brief papers of their own. The idea behind the creation of this group was that the work of the Commission's experienced scholars and policymakers should be complemented by a younger generation who, in their ongoing dialogue and in their syntheses of the more than two dozen papers, would add new life and new ideas to the project. During their work together over the spring and summer, each Fellow selected overlapping cross-sections of the papers to critically analyze and present for a series of Fellows-led group discussions, all under the tutelage of Commission Chairman Dr. Edmund W. Gordon and Dr. Ernest Morrell, Director of the Institute of Urban Minority Education (IUME) at Teachers College, Columbia University.

The Gordon Commission Fellows are: Keena Arbuthnot, Ph.D. in educational psychology from the University of Illinois at Urbana-Champaign; Sherice N. Clarke, Doctoral student in education at the University of Edinburgh; Juliette Lyons-Thomas, Doctoral student in the Measurement, Evaluation, and Research Methodology (MERM) program at the University of British Columbia; Jordan Morris, Doctoral student in the Social Welfare program at the University of California, Los Angeles; Catherine Voulgarides, Doctoral student in the Sociology of Education program at New York University; and Amanda Walker Johnson, Ph.D. and M.A. in anthropology (sociocultural) from the University of Texas at Austin's African Diaspora Program. For bios and more information, please go to

<http://www.gordoncommission.org/fellows.html>.

### Science, Technology, and Scientific Imagination

Under the auspices of the Gordon Commission on the Future of Assessment in Education, the Arizona State University (ASU) Center for Games and Impact, the ASU Center for Science and the Imagination, and the Carnegie Mellon Project on Working Examples (funded by the MacArthur Foundation and the Gates Foundation) sponsored two concurrent symposia on October 25–27, 2012, at ASU: 1) The Perils and Possibilities of Emerging Technologies for Learning and Assessment, and 2) Science and Imagination – The Future for the Teaching, Learning and Assessment We Want and How to Get There. These symposia are based on longer-term projects related to these areas.

### Excellence, Diversity, and Equity

In the agreement by which the Gordon Commission was funded, the Commission was asked to give special attention to the problems posed for assessment by the concern for the concurrent privileging of the pursuit of excellence and equity in academic opportunity and achievement. Through the Excellence and Equity Project, the Commission has honored that agreement. This concern is addressed in a group of the Gordon Commission papers directed at the synthesis of knowledge and thought concerning disabling and handicapping conditions, cultural variation, differences in first language, and class/ethnic diversity. In addition, a small study group has been designed to give extended discussion to this set of problems.

### Communication and Social Marketing

A bi-focal program of communication was developed for the Gordon Commission. As part of the internal communication plan, the Commission created a blog that was used for the Commission members. The external communication plan included: a) The creation of a

website; b) The development of a bi-monthly bulletin, *Assessment, Teaching, and Learning*; c) Hosting of public hearings and forums; and d) The use of regular and social media for the dissemination of strategic messages to target audiences.

## Bibliographic Resources

From the beginning of the work of the Gordon Commission, staff members and Fellows have worked to compile a comprehensive collection and directory of the bibliographic resources used in the course of this work. Our Resources File is not a definitive collection; however, it does represent what we think of as the most important literature that has relevance for the work of the Gordon Commission. The collected works are organized under the working categories used by staff and can be searched using common search terms and the special search terms indicated in the file. It can be found under “Resources” at [www.gordoncommission.org](http://www.gordoncommission.org).

## Knowledge Synthesis Project

This decision led to the conduct of the central activity of the Gordon Commission that has been referred to as the Knowledge Synthesis Project. This initiative consisted of the commissioning of 25 reviews of extant knowledge and thought papers concerning the issues that were identified as most important. These papers can be found at [http://www.gordoncommission.org/publications\\_reports.html](http://www.gordoncommission.org/publications_reports.html). The papers that resulted from this work will be published in the series *Perspectives on the Future of Assessment in Education* in four categories:

### Assessment in Education: Changing Paradigms and Shifting Epistemologies

1. Epistemology in Measurement: Paradigms and Practices – Part I. A Critical Perspective on the Sciences of Measurement (Ezekiel J. Dixon-Román and Kenneth J. Gergen)
2. Epistemology in Measurement: Paradigms and Practices – Part II. Social Epistemology and the Pragmatics of Assessment (Kenneth J. Gergen and Ezekiel J. Dixon-Román):
3. Postmodern Test Theory (Robert J. Mislevy) <sup>5</sup>

<sup>5</sup>Postmodern Test Theory (Robert J. Mislevy) is Reprinted with permission from *Transitions in Work and Learning: Implications for Assessment, 1997*, by the National Academy of Sciences, Courtesy of the National Academies Press, Washington, DC.



4. What Will It Mean to Be an Educated Person in Mid-21st Century? (Carl Bereiter and Marlene Scardamalia)
5. Toward an Understanding of Assessment as a Dynamic Component of Pedagogy (Eleanor Armour-Thomas and Edmund W. Gordon)
6. Preparing for the Future: What Educational Assessment Must Do (Randy Elliot Bennett)
7. Changing Paradigms for Education: From Filling Buckets to Lighting Fires to Cultivation of Intellectual Competence (E. Wyatt Gordon, Edmund W. Gordon, John Lawrence Aber, and David Berliner)

### **Changing Targets of Assessment in Education**

8. The Possible Relationships Between Human Behavior, Human Performance, and Their Contexts (Edmund W. Gordon and Emily B. Campbell)
9. Education: Constraints and Possibilities in Imagining New Ways to Assess Rights, Duties and Privileges (Hervé Varenne)
10. Toward a Culture of Educational Assessment in Daily Life (Carlos A. Torre and Michael R. Sampson)
11. Toward the Measurement of Human Agency and the Disposition to Express It (Ana Mari Cauce and Edmund W. Gordon)
12. Test-Based Accountability (Robert L. Linn)
13. Variety and Drift in the Functions and Purposes of Assessment in K–12 Education (Andrew Ho)
14. Testing Policy in the United States: A Historical Perspective (Carl Kaestle)

### **Psychometric Change in Assessment Practice**

15. Four Metaphors We Need to Understand Assessment (Robert J. Mislevy)
16. Assessment as Evidential Reasoning (Joanna S. Gorin)
17. Assessment in the Service of Teaching and Learning (Clifford Hill)
18. Testing in a Global Future (Eva Baker)

19. Technological Implications for Assessment Ecosystems: Opportunities for Digital Technology to Advance Assessment (John T. Behrens and Kristen E. DiCerbo)
20. Toward the Relational Management of Educational Measurement Data (Greg K. W. K. Chung)

### **Assessment in Education and the Challenges of Diversity, Equity and Excellence**

21. Human Diversity, Assessment in Education and the Achievement of Excellence and Equity (A. Wade Boykin)
22. Assessment of Content and Language in Light of the New Standards: Challenges and Opportunities for English Language Learners (Kenji Hakuta)
23. Democracy, Meritocracy and the Uses of Education (Aundra Saa Meroe and Edmund W. Gordon)
24. Accommodation for Challenge, Diversity and Variance in Human Characteristics (Martha L. Thurlow)
25. A Social Psychological Perspective on the Achievement Gap in Standardized Test Performance Between White and Minority Students: Implications for Assessment (Rodolfo Mendoza-Denton)



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on the Future of Assessment in Education

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The Gordon Commission was established by ETS to investigate and advise on the nature and use of educational testing in the 21st century. 22008

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