Why Educational Standards Are Not Truly Objective

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Abstract
Educational standards have become a popular choice for setting clear educational targets for students. The language of standards is that they are "objective" as opposed to typical tests which may suffer from bias. This article seeks to further analyze the claims that standards are objective and fair to all. The author focuses on six issues which illustrate the problematic nature of educational standards. Examples from the Common Core standards are chosen to show the range of problems associated with standards-based systems. Given these arguments, it is questionable as to whether educational standards represent a better alternative to norm-referenced tests.

***Keywords*:** Educational measurement, educational standards

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The college instructor blames the high school teacher, the high school teacher complains of the grade teacher, each grade teacher above first grade finds fault with the poor work of the teacher in the grade below, and the first grade teacher in turn is chagrined at the shortcomings of the home training. Must this go on indefinitely? Whose opinion shall prevail? Is it not possible to get away from personal opinion to an agreed-upon consensus of opinion? May we not replace the constantly conflicting subjective standards with definitely defined objective standards?

—Wilson & Hoke, 1921

Educational standards are often seen as a way to induce higher student performance (Post et al, 2008). Standards can provide a clear target that may increase student motivation and outcomes. Many K-12 schools across the country are now actively raising standards as a way to improve performance. Some of this recent activity is linked to the Common Core standards which have been adopted by forty-five states.

The current discussion of standards-based education often uses the language that standards are "objective". This is in comparison to a norm-referenced test that typically ranks students in a relative manner. As norm-referenced tests often produce a distribution of outcomes ranging from high to low achievement, standards seem to offer an alternative where all students have an opportunity to meet a defined standard.

Yet are these educational standards truly "objective"? Do they set appropriate levels of student achievement? And how are these standards being assessed in practice? All these related questions are of great importance if standards-based education is to be equitable and objective.

This article seeks to place the notion of objective standards under greater scrutiny. On the surface, if a set objective standard is the educational goal, then all students will have to opportunity to reach this standard. However, the use of standards for assessment is, in practice, problematic for reasons I will discuss here.

The Oxford dictionary defines objective as "*Not dependent on the mind for existence; actual:*" (Oxford, 2014). As such, objective is in contrast to subjective, where personal opinions are employed. This paper uses these definitions for the forthcoming analysis.

The following six principles illustrate the problems with standards claiming to be objective way of assessing student performance.

1) The selection of a standard is not objective.

The goal of selecting a standard is to produce a clear educational target for students. Whereas a given exam on a subject can be made more or less difficult, once a standard is set the target for assessment should be clear. However, the selection of this standard must involve human judgment. Here is a Common Core standard for kindergarten math, CCSS.Math.Content.K.CC.B.5:

> Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects. (http://www.corestandards.org/Math/Content/K/CC/B/5/)

Focusing on the last part of the standard, "given a number from 1–20, count out that many objects", this seems very clear and transparent. However, how was the range 1-20 determined as being appropriate for a kindergarten level? Why were other ranges, such as 1-5, 1-10, 1-21, or 1-30 not chosen? All of these alternatives would be equally as clear and transparent for students. These alternate standards have different levels of difficulty, but based only on the criteria of being objective, all these standards would suffice.

Here is another Common Core standard for kindergarten math, CCSS.Math.Content.K.CC.A.3:

> Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).
> (http://www.corestandards.org/Math/Content/K/CC/A/3/)

Again, the target is clear – write the numbers from 0 to 20. Yet why was 0 – 20 chosen? Why not other ranges? This objective standard of writing 0 – 20 is just one of many potential ranges that could be chosen for a kindergarten-level standard. This range was subjectively chosen using human judgment.

The use of language is paramount in describing a standard. From one perspective, it is an "objective standard" while from another perspective it is "subjectively chosen". Hence, the standard is not truly objective in the literal sense of the word, i.e., that it is free from any potential bias. These mathematical standards were not directly based on facets of reality – they were subjectively chosen using human judgment.

2) *The selection of a standard depends on the ability of the students trying to meet the standard.*

As discussed, the Common Core Standard CCSS.Math.Content.K.CC.B.5 revolves around kindergarteners learning to count objects. At some point, human judgment was used to determine that counting from 0 – 20, but not other ranges, was the appropriate standard. However, this judgment must, at some level, be based on the potential ability of kindergarteners to reach this standard. For example, it could be put forth as a standard that kindergarteners should be able to perform calculus. Such a standard would be viewed as unrealistic because kindergarteners do not have the mental ability to perform calculus. For another example, if a fitness standard was set that kindergarteners should be able to run a 4-minute mile, this would also be viewed as absurd because kindergarteners do not have the physical ability to meet the standard. Hence, a standard is indirectly chosen based on the ability of the subjects to meet the standard. If the students do not have the ability, the standard is not viable or realistic.

In many cases, the judgment as to whether a standard is appropriate or not is the result of experience. If educators witness generations of kindergarteners where most students are able to

count up to 20 objects, then such a standard may seem reasonable. The standard is implicitly based on what students can do given their abilities at that point in time and reasonable effort.

The role of expectations should also be discussed here. Some argue that standards should be set as to stretch what students can do, and not just rely on their current level of performance. Research has shown that expectations can affect student performance (Muller, 1997). However, a standard must be within reach of the student to be effective. If a standard is beyond the ability of a student, it may in fact be demotivating to the student (Harlen & Crick, 2003).

3) Standards ignore the fact that academic ability varies across students.

Assume a standard is chosen that is realistic given the student body. If all students possess equal academic ability, and if all students then put in equal effort or time, then such a standard could indeed be fair. However, academic ability is not equal distributed among individuals.

A number of studies have showed that academic ability in various subjects tends to have a normal statistical distribution. For example, reading ability has a normal statistical distribution (Shaywitz et al, 1992). Mathematical ability has a normal statistical distribution (Docherty et al, 2010). General cognitive ability also has a normal statistical distribution (Plomin, 1999).

This variation in student ability directly affects educational performance. A recent high school study showed that 52% of the variation in English scores and 58% of the variation in Mathematics scores was due to heritability (Shakeshaft et al, 2013). Differences in academic ability are also predictive, meaning initial tests can directly predict later levels of academic achievement in subjects (Furnham, 2009).

In short, if it is known that student ability varies and explains a large portion of educational outcomes, why is one standard the appropriate measure for student outcomes? A mid-range standard might be easy for high ability students and impossible for low ability students, and thus it would only effectively serve student in the middle ranges. The only appropriate single standard given a normal distribution of abilities might be what the lowest-ability student could achieve with reasonable effort. Of course, such a standard could be passed by virtually all students with little effort and would most likely be perceived as one with low rigor.

4) Standards that reference "grade-level" materials are indirectly based on the abilities of students and/or rely on human judgment.

A number of the Common Core State Standards reference "grade-level" reading materials. For example, here is the Common Core standard CCSS.ELA-Literacy.RF.4.4a:

Read grade-level text with purpose and understanding.
(http://www.corestandards.org/ELA-Literacy/RF/4/4/a/)

As to what defines grade-level, the user is directed to Appendix A. In the appendix, it discusses how the approach to defining "grade-level" relies upon both qualitative, quantitative, and "reader and task" components (http://www.corestandards.org/assets/Appendix_A.pdf , Page 4) . "Reader and task" refers primarily to the student's motivation and interest in the text.

First, the qualitative part of defining a grade-level standard involves human judgment, and therefore may suffer from bias as discussed earlier in this paper. The qualitative component is explicitly defined as such relying on human judgment:

> Using qualitative measures of text complexity involves making an informed decision about the difficulty of a text in terms of one or more factors discernible to a human reader applying trained judgment to the task. In the Standards, qualitative measures, along with professional judgment in matching a text to reader and task, serve as a necessary complement and sometimes as a corrective to quantitative measures, which, as discussed below, cannot (at least at present) capture all of the elements that make a text easy or challenging to read and are not equally successful in rating the complexity of all categories of text. (http://www.corestandards.org/assets/Appendix_A.pdf , Page 5)

Several quantitative measures are discussed such as the Flesch-Kincaid Grade Level test and the Lexile framework. While these various formulas can calculate a score for a text based on objective factors (word count, etc.), assigning a grade level to these scores is based on the average performance of actual students in reading these texts.

From the Lexile website:

> Grade equivalents are scores based on the performance of students in the test's norming group. The grade equivalent represents the grade level and month of the typical (median) score for students. For example, a 5th-grade student who earns a 5.9 on a norm-referenced test has earned a score similar to the 50th percentile students in the test's norming group who were in their ninth month of fifth grade. Normative data are often collected at one point in the year from students in two or more grades. (https://www.lexile.com/about-lexile/grade-equivalent/)

It is clearly stated that Lexile grade levels are norm-referenced, not criterion-referenced. Therefore, the selection of grade-level materials by using this formula will be based on the average performance of students in a grade.

Grade-level measures, as defined by the Common Core, are then not truly objective in two ways. The qualitative measures involve human judgment and are subject to bias. The quantitative measures are based against average student performance, and therefore are norm-referenced.

5) The assessment of some standards is directly subjective.

The practical assessment of standards leads to other problematic issues regarding objectivity. Some of the earlier mentioned Common Core standards, such as counting 20 objects, should be relatively easy to score. However, many of the other standards implicitly rely on human judgment. Here is a Common Core Standard for English Language Arts, Grade 6, CCSS.ELA-Literacy.L.6.3:

> Use knowledge of language and its conventions when writing, speaking, reading, or listening. (http://www.corestandards.org/ELA-Literacy/L/6/3/)

Such a standard does not lend itself to the objective world of mathematics where answers can be definitively right or wrong. Grading under such a standard will be highly subjective, and it would be difficult if not impossible to make this grading consistent from classroom to classroom, much less from state to state. In practice, many teachers will be using their judgment alone for assessment creating even more potential for bias.

The sub-standard, CCSS.ELA-Literacy.L.6.3a, that follows with the main standard is also highly subjective:

> *Vary sentence patterns for meaning, reader/listener interest, and style.* (http://www.corestandards.org/ELA-Literacy/L/6/3/a/)

This sub-standard leads to many questions: how much variation? What audience? Whose definition of style? It is easy to see that these open-ended questions will lead to a wide variety of opinions, and hence a wide variability (Shavelson et al, 1993).

The validity of assessing non-absolute levels of student performance can be strengthened by using rubrics and other established procedures. However, the development of these rubrics and procedures involved human judgment and again do not represent something free of potential bias. Again, the use of language is paramount: an "objective" rubric has been subjectively developed using human expertise. As such, even though rubrics may reduce variability in assessment, they do not eliminate the problem of bias since they were created using human judgment.

6) *The "cut-off" score for meeting a standard across several questions is the result of a subjective process.*

With simple material, meeting a standard or not can be relatively clear. The previously discussed standard, CCSS.Math.Content.K.CC.A.3, essentially has students write the numbers from 0 to 20. This standard could be assessed by a single question or prompt. Yet as material gets more complex, it becomes more likely that several questions would be needed to assess a standard. For example, here is Common Core standard, CCSS.Math.Content.HSA.REI.B.3:

> Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.
> (http://www.corestandards.org/Math/Content/HSA/REI/B/3/)

This type of standard would most likely be assessed with a set of questions as opposed to a single question. So if multiple questions are used, what level of proficiency constitutes mastery of the standard? For example, if a student gets 7 out of 10 problems correct, has he or she achieved the standard? The answer to that question will involve human judgment.

Many agencies set "cut" scores for determining the pass/fail level. Yet setting any "cut" score to determine mastery or proficiency will necessarily involve subjective judgment. The only objective cut score is 100%. All other agency-created cut scores, even if they are developed from an established procedure, must ultimately rely on human judgment at some level. The procedures for setting cut scores were developed using human judgment, and therefore are not free of potential bias.

Conclusion

The aim of this article was to investigate the claim that educational standards are objective, and that, as such, they represent a superior alternative to the typical norm-referenced tools of assessment. Under further scrutiny, this does not appear to be the case for the reasons discussed. Standards are subjectively chosen by individuals and groups, and the chosen standards are implicitly based on the ability of the student body. The use of singular standards ignores differences in academic abilities.

Standards that focus on grade-level materials are also implicitly based upon the ability of the student body. The assessment of some standards, such as in reading or writing, will automatically involve human judgment. Finally, the setting of "cut" scores to determine pass/fail status involves human judgment at some level.

Given the preceding discussion, it is questionable as to whether standards-based assessment offers a legitimate alternative to typical norm-referenced assessment. Norm-referenced assessment can show how students compare to one another, but these results may not be connected to any outside reference point. Standards-based education attempts to connect to absolute criterion, but as this article shows there are many issues in that regard. A sampling of Common Core standards shows them to be subjectively chosen, implicitly based on student norms, and subjectively assessed in some subjects. In conclusion, the available evidence suggests that the creation and assessment of standards is not an objective process, but one that relies heavily on human judgment and average student performance.

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Aristeia Leadership: A Catalyst for the i²Flex Methodology

What it takes to ingeniously enact blended learning in K12 international schools

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Abstract

In response to the global educational reform we have developed a new education paradigm, the Global Morfosis paradigm which has been implemented at the American Community Schools of Athens (ACS Athens) Greece for the past decade. This dynamic paradigm consists of three inseparable, interconnected, and interrelated components: the Educational Philosophy of Morfosis (Μορφωση), the i²Flex Delivery Methodology, and the Aristeia (Αριστεια) Leadership Approach. Morfosis is defined within the 21st century framework, as a holistic, meaningful, and harmonious educational experience, guided by ethos (Gialamas, 2014). The vehicle to implement Morfosis, is the i²Flex (isquareFlex), a non-traditional learning methodology that draws on the fundamentals of blended learning, and integrates face-to-face and technology-supported instruction with faculty-guided and independent student learning, aiming at developing higher order cognitive skills within a flexible and inspiring learning design (Avgerinou, 2104). The Aristeia Leadership approach is defined by its two essential components (a) the establishment of an *Authentic Leadership Identity* (ALI), and (b) the creation of a *Collective Leadership-Partnership Approach* (CPA) (Gialamas, Pelonis, & Medeiros, 2014).

Keywords: *Aristeia leadership, i²Flex, global morfosis, blended learning, K12*

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An Education Reform at the Onset of the 21st Century

With the advent of the 21st century, it has been recognized that the world has developed in such diverse directions and created new and particularly complex demands for citizenship, college and careers, that it is no longer possible for old learning environments — associated with old learning paradigms — to accommodate them (Avgerinou, 2014).

The new reality has led to the development of a new vision for 21st century learning (Dede, 2010; LEAP, 2007; NCREL & the Metiri Group, 2003; OECD, 2005; Partnership for 21st Century Skills, 2006, 2009, 2011). The Partnership for the 21st Century Skills framework (2006; 2009; 2011), the most detailed and widely adopted of all aforementioned, emphasizes that in addition to core subject knowledge, such skills as information and communication, inter-personal and self-directional, as well as being well versed with the technologies of this millennium (Figure 1), both from the consumer and the producer's standpoints, are critical in order to prepare students as life-long learners to successfully cope with the demands of the ever changing world of the post-industrial era of information revolution.

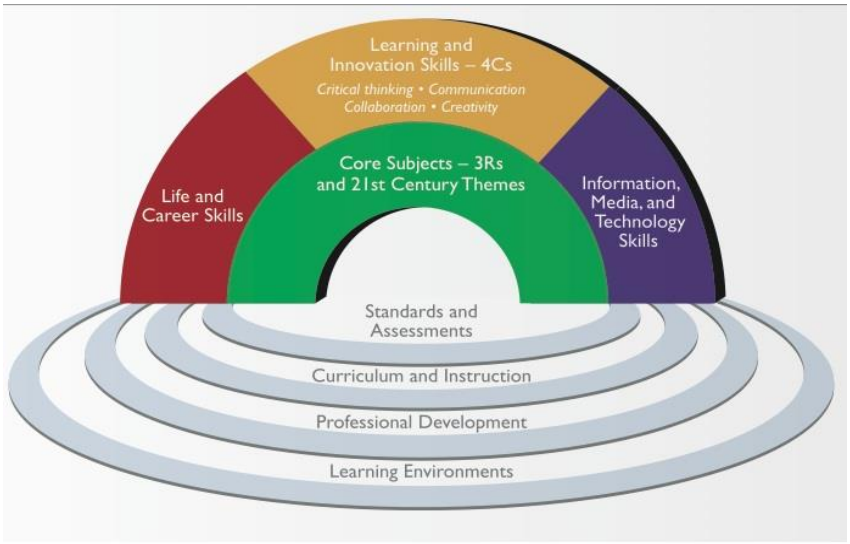

Figure 1. 21st Century Student Outcomes and Support Systems (Partnership for 21st Century Skills, 2011)

For these learning outcomes to be achieved it is not sufficient anymore to "confine" teaching in the intersection between knowledge and pedagogy, that is, solely to apply Pedagogical Content Knowledge (PCK)- a term coined by Shulman (1986; 1987). Schools need to seriously invest in, and systematically capitalize on the affordances of new technologies thus pay specific attention to Technological Pedagogical Content Knowledge (TPCK), defined as the interaction of technology with both pedagogy and content (Mishra & Koehler, 2006). More so than ever before, schools are now called to utilize more learner-centric pedagogies with specific focus on the newly emerged, unique profile of the *digital learner (*Prensky, 2001).

Indeed, over the past decade we have increasingly witnessed systematic endeavors toward a student-centered integration of new and emerging educational technologies. These have resulted in the exponential growth of online and blended learning in both Universities and K12

schools (Davis & Niederhauser, 2007; Rice, 2012; Watson, Murin, et al., 2010). The culminating point of all efforts related to online (and blended) learning was their salutation as the *disruptive force* that can transform the factory-like structure of today's educational institutions (Avgerinou, 2014). Hence, Clayton Christensen, Harvard Business School Professor who coined the term of art *Disrupting Innovation* (Christensen, Horn, & Johnson, 2011), argues that by 2019 50% of all high school courses will be delivered online.

The Educational Philosopy of Morfosis

The American Community Schools of Athens (ACS Athens) Greece is deeply aware of the fact that the traditional educational approaches followed by K12 academic institutions cannot serve their learners' diverse needs as effectively anymore. As a K12 international school, ACS Athens is also affected by an idiosyncratic set of factors such as lack of a prescribed curriculum, multicultural environment, high faculty mobility, high student mobility and ensuing rolling admissions, which has a critical role in the overall planning and modus operandi of the school. In addition, ACS Athens is a strong supporter of the notion of complete alignment among school learning outcomes, university and market needs (Avgerinou, 2014).

Given these characteristics, and in response to the afore mentioned global educational reform, ACS Athens has developed its own education philosophy, Morfosis (Gialamas & Pelonis, 2009)-- a central tenet of Classical Greek education-- which is defined within the 21st century framework, as a holistic, meaningful, and harmonious educational experience, guided by ethos. Morfosis as an *outcome* is housed under the broader concept of Global Morfosis. Morfosis as a *process* is implemented via a concerted effort that is school-wide and action research-based, to integrate face-to-face and technology-supported teaching and learning (i^2Flex) with Institutional Leadership.

One might then ask, what kind of leadership an educational institution needs in order to make Global Morfosis an institutional reality. The authors propose that the type of institutional leadership needed to achieve such an authentic, significant, yet challenging goal is Aristeia Leadership, that is, an advanced form of Innovative Leadership (Gialamas, 2012; 2014).

Aristeia Leadership

Aristeia Leadership is the evolution of the Innovative Leadership (Gialamas, 2012; 2014) which has been defined as the continuous act of effectively engaging all members of the institution (constituencies) while utilizing their differences, energies, inputs, and diverse qualities for all constituencies of the institution but primarily for the benefit of the students. (Gialamas, 2011, 2014; Pelonis & Gialamas, 2010).

According to Gialamas (2014), this type of leadership has four dimensions:

a. *interpersonal*: Inspiring all constituencies to strive for excellence
b. *setting standards*: Establishing the standards for good conduct; serving as a model for meeting these standards

c. *serving humanity*: Ensuring the emphasis of the education offered by the institution, is placed on the entire civic spectrum, while stemming from both social interest and commitment
d. *establishing a partnership* between the leader and her/his leadership team

The Innovative leadership provided the foundation for the formation of the Aristeia Leadership and the establishment of its two defining dimensions, namely (Gialamas, Pelonis, & Medeiros, 2014):

a. the Authentic Leadership Identity (ALI), and,

b. the creation of a *Collective Leadership-Partnership Approach* (CPA).

As regards the ALI, we turn to Socrates, and apply a central tenet of the Socratic philosophy – that living a meaningful life begins with the quest to *know oneself*. Thus:

Authentic Leadership Identity = *(Life Experiences and Individual Characteristics)* + *Personal Leadership Identity*

Life Experiences and Individual Characteristics

According to Gialamas, Pelonis, and Medeiros (2014), the process of understanding where we come from and how life has affected and shaped our personalities, life choices and approaches to living is important in developing and defining a leadership identity. We do not exist void of our experiences, and our experiences and perceived views of the world to a great degree define our leadership approach.

Therefore knowing oneself, at this level, is a necessary first step in creating the leadership vision and defining its philosophy of education. It is also the force that will guide decision-making, establishing relationships, and ensuring that the institution is a healthy, thriving entity within the community, capable of moulding healthy individuals who will become tomorrow's leaders, global citizens with a commitment to serving humanity.

Personal Leadership Identity

As Gialamas et al. (2014) propose, within this personality framework, we must identify clearly our principles and values, knowing very well which are absolutely non-negotiable. Once defined, these are the fixed guides that point us in the direction of achieving our vision. By principles, we refer to specific ways of behaving — a general way of conducting ourselves. Values are best described as the standards of our actions and the attitudes of our hearts and minds that shape who we are, how we live, and how we treat other people.

Next, we must also clearly define our professional goals through a similar process of self-reflection and revision: where do we want life to take us, and how can we participate in this co-creative process? These are the questions a leader must continuously ask in order to revise, fine-tune and refine his/her leadership approach. Finally, as the last step in establishing a leadership identity, the leader must clearly identify his/her personal goals, adopting a holistic approach to

life and leadership by ensuring that personal and professional goals align and do not conflict with or undermine one another.

Creating a Collective Leadership- Partnership Approach

Establishing such a leadership includes the following stages (Gialamas et al., 2014):

i. Establishing a partnership based on common principles and values, and complementary personal and professional goals in life;
ii. Distributing authority and decision making;
iii. Outlining clearly the type, magnitude and areas of authority;
iv. Supporting and encouraging team members in using their decision making authority;
v. Reflecting continuously on the partnership in order to adjust the distribution of ownership of decision making;
vi. Motivating members of the leadership team to reproduce this model in their work with members of their own teams;
vii. Fostering the same model of collaborative leadership in the classroom to empower students to pursue the kind of learning necessary to develop the intellectual, social and moral autonomy we have defined as essential 21st century human skills.

Partnerships and collaborations ensure that there are checks and balances, that other individuals participate in the decision making process and that there is a comprehensive support system in place to ensure that the institution thrives and functions at the highest possible level of achievement. They also create a greater pool of knowledge, experience, expertise, questions, ways of knowing and approaches to problem solving that make the sum greater than the individual parts. It is crucial that all members of the leadership partnership share a belief in the institutional vision and are committed to striving towards reaching common goals.

Last but not least, one must understand that the adoption of Aristeia Leadership entails a willingness to accept and live with a certain amount of risk, because innovation and change involve taking risks with new ideas that have not been tried before and thus could fail (Gialamas, 2014).

i²Flex: Delivering and Shaping the Morfosis Educational Philosophy

As mentioned earlier, the other critical component driving and facilitating the effective implementation of Morfosis Educational Philosophy, is i²Flex (isquareFlex), a non-traditional learning methodology that has been organically developed by the ACS Athens community of learners (Avgerinou, Gialamas, & Tsoukia, 2014). The i²Flex methodology integrates technology-supported, student independent learning that is guided and monitored by faculty with face-to-face learning. The main goal underlying the implementation of this learner-centered methodology in systematic, pedagogically sound ways, is the development of higher order cognitive skills as these have been specified in Bloom's revised Taxonomy (Anderson &

Krathwohl, 2001), within a learning design framework that is inspiring and flexible regarding time, pace, place, and/or mode.

Through linking high quality teaching and high quality courses with the collaborative, networked, information-rich environments that are a hallmark of the information age (Davis, et al., 2007 in Avgerinou, 2013), i²Flex draws firmly on the research and practice of blended learning (Clayton Christensen Institute, 2011; Hopper & Seaman, 2011), as this has been applied in the K12 across the US and beyond. Ultimately, i²Flex aims at cultivating and expanding students' 21st century skills, while empowering them to function as *architects of their own learning* (per the ACS Athens' vision), while at the same time facilitating their successful preparation for their higher education studies, as well as their future roles both as professionals, and global citizens.

The independent inquiry that students are required to conduct under the close monitoring of ACS Athens faculty, as well as the flexibility of continuously and dynamically shaping the relationship among time, pace, place, and mode, are the two hallmark features of i²Flex, and the ones that differentiate it from other types of blended learning.

During the 2012-13 school year a few faculty experimented with i²Flex. In the following year, a comprehensive, more sophisticated pilot plan was developed that extended and expanded the program's implementation. Thus, several i²Flex classes were piloted in 2013-2014 both at the Middle School and Academy (High School), representing a variety of content areas, instructional design models, and levels of technology integration. The i²Flex participating faculty regularly attended individual consultations (Figure 2), and group professional development sessions relevant to blended teaching and learning. Their courses were designed and reviewed according to benchmarks for online course design in the K12 that were developed by Quality Matters® (2011-2013). Students of participating i²Flex classes, but also administrators and parents were educated about the i²Flex methodology.

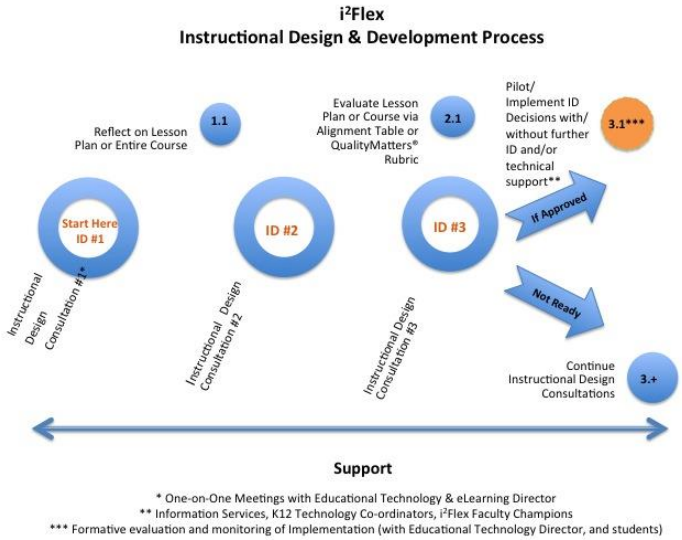

Figure 2. Instructional Design and Development Process for i²Flex Participating Faculty and their Courses

The Praxis of i²Flex

But what does it really take to ingeniously and competently design and enact i²Flex teaching and learning in K12? What essential resources, mechanisms and processes are necessary for such a school-wide, profound change to succeed? Our experience indicates that the following components need to be firmly in place:

a. *technology infrastructure* to support the needs of i²Flex implementation at all levels;

b. *administration, faculty, and staff* training and development (relevant, personalized, and sustainable);

c. *curriculum* (adjustments as necessary to fit the i²Flex methodology);

d. *leadership* (i.) to convince the constituencies about the educational value, and potential of the i²Flex methodology; and, (ii.) to support the i²Flex integration (first through communicating and educating all school constituencies about it, and subsequently through supporting in particular the faculty to implement the school-wide change).

ACS Athens has been implementing i²Flex since the academic year 2012-2013, through the following process that also illustrates the utilization (role and sequence) of the aforementioned components:

a. After the careful consideration of the technical requirements such as efficiency, effectiveness, capacity, and speed, the appropriate investment was made in order to establish a technical infrastructure that correctly fitted the above criteria.

b. An educational technology professional specializing in instructional design and development for eLearning was hired (*Director for educational technology and eLearning*). Her role was to perform various needs assessments that would inform her subsequent design and delivery of professional development primarily for faculty; offer personalized consulting sessions to i²Flex faculty so they could design, implement, and evaluate their courses; develop various i²Flex-related policies and procedures, including faculty performance indicators; oversee, and guide the educational technology and eLearning initiatives that support teaching and learning across ACS Athens; evaluate i²Flex courses according to the QualityMatters® standards for the K12; provide leadership and vision for academic technology across the school and beyond; serve as a resource on trends, research, applications, and effective practices related to the use of educational technology and eLearning in the various school programs; and, educate students, parents, administrators, staff and the larger practitioner as well as scholarly community about the educational benefits of i²Flex.

c. Faculty champions decided what curriculum aspects were best delivered face-to-face or in combination with web-based delivery. This work required the development of specific types of lesson plans including specific instructional activities and assessments.

Administrators in addition to understanding the educational aspects, were trained so they could initiate the development of a faculty performance tool appropriate to address all elements of teaching via the i^{2}Flex methodology.

d. The leadership of ACS Athens presented, explained and received the Board of Trustees' approval and support to implement i^{2}Flex. Then, the methodology was presented to parents in small, informal groups followed by formal presentation focusing on the needs of each of the three schools (Elementary, Middle, and High School). Similarly, small group presentations and discussions took place with faculty, at department meetings, in division meetings, and then during meetings of faculty per school. For Middle and High school students, the presentation took place in school-wide assemblies followed by class discussions. As typically change creates resistance, ACS Athens leadership supported and encouraged the faculty in particular when things did not go according to plan. Hence, the faculty felt confident and secure to continue piloting this initiative in a positive and accepting climate. The leadership repeatedly enlightened the parents and students about the benefits of this innovative approach.

Close to 25% of ACS Athens faculty participated in the first stage of this initiative. In the current academic year, all faculty have adopted the i^{2}Flex template in the design of their Moodle course sites, while at the same time 50% of the faculty have taught according to the i^{2}Flex methodology. It is anticipated that next year, all current and incoming ACS Athens faculty will fully implement i^{2}Flex in their classes.

Recommendations

Despite the fact that the i^{2}Flex methodology is still in its infancy, and data collection and analysis is not completed yet, recommendations may already be attempted with regard to (a) the process that needs to be in place, but also (b) the factors that need to be considered so that such a methodology can be successfully adopted.

Process

According to Pelonis and Gialamas (2010), "It is easy to change policies, structures, curriculum, and management approach, but it is difficult to change how the members of the institution think and behave" (p. 76). Thus, the presence of an innovative institution leader is essential. The leader must begin with the understanding of the existing culture of the institution which is typically defined by its history, policies, management style, and, most importantly, the thinking and behavior of its constituents.

Factors

The following are recommended as the most critical factors for such a methodology to be successfully adopted:

a. An institutional culture that is embracing, fostering, but most important supporting, change and innovation

b. A commitment to technology for educational purposes, and, most important, a commitment to thinking differently must be present.

c. A commitment to continuously educating faculty, students, parents, and administrators to internalize the *adaptive reasoning as the thinking process of improving teaching and learning*.

Conclusion

If the goal of education is to successfully prepare students for the future, we cannot continue educating them in ways that address education and market needs of the past. The world has changed exponentially in ways that are not always easy to understand so as to accurately predict the needs of the future, and prepare students accordingly. Thus, an educational reform is not only necessary, but also critical in bringing about drastic changes in educational curricula as well as the way these are implemented.

Educational technology should be approached as an integral part of shifting to a different level and trajectory of thinking and learning. In particular, our focus should be how teaching and learning could be meaningful, relevant, and transformational for the learner; but also, how this thinking can utilize all the benefits of *world wide innovations* for developing critical thinking, for promoting creativity and most importantly for cultivating wisdom and ethos. Besides, the ultimate responsibility of Academic Institutions should be to prepare tomorrow's leaders in order to serve humanity with noble purpose and ethos.

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