

Unpacking the Meaning of a Standards-based Education System

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Abstract

Countries all over the world have increasingly been adopting standards-based reforms in their school systems. A proliferation of concepts and terms related to the concepts of standards-based education systems has followed as well. Thus, there is a need for papers that help clarify concepts and terms related to standards-based education systems. This paper provides an overview of the features of standards-based education systems, with a brief discussion on standards-based reform in India. More importantly, it clarifies the meanings of terms related to standards-based curricula—aims, competencies, goals, learning outcomes, and instructional objectives—with examples specifically related to the Indian context. The paper discusses some caveats associated with standards-based education systems and concludes with suggestions for improvement and implementation.

Keywords: Standards-based system, Competency-based education, Standards, Learning outcomes, NEP 2020

Introduction

In many parts of the world, there have been convergent reforms in education systems and school curricula in the late 20th and 21st centuries (Gouëdard, Pont, & Huang, 2020). These reforms have been driven by the demands of the 21st century, which is characterised by rapid and unpredictable developments in many academic, vocational, and professional domains. Thus, traditional curricula that emphasised the memorisation and mastery of content in tightly partitioned school subjects have fallen out of favor. Traditional curricula only prescribed the content to be covered within a given amount of time. They did not define the levels of knowledge, skills, and

attitudes that students had to display at the end of instruction to be successful learners (Richard Zagranski, William T. Whigham, & Patrice L. Dardenne, 2008).

In response to the problems associated with traditional curricula, many countries carried out curricular reforms in the late 20th and 21st centuries. School curricula in the 21st century aim to help learners integrate knowledge, attitudes, skills, and multidisciplinary capabilities for solving ill-structured problems in unique and ever-changing environments. The need to ensure equity, accommodate diversity among learners, and promote the autonomy of teachers and administrators has also spurred curricular reforms (Gouëdard, Pont, & Huang, 2020).

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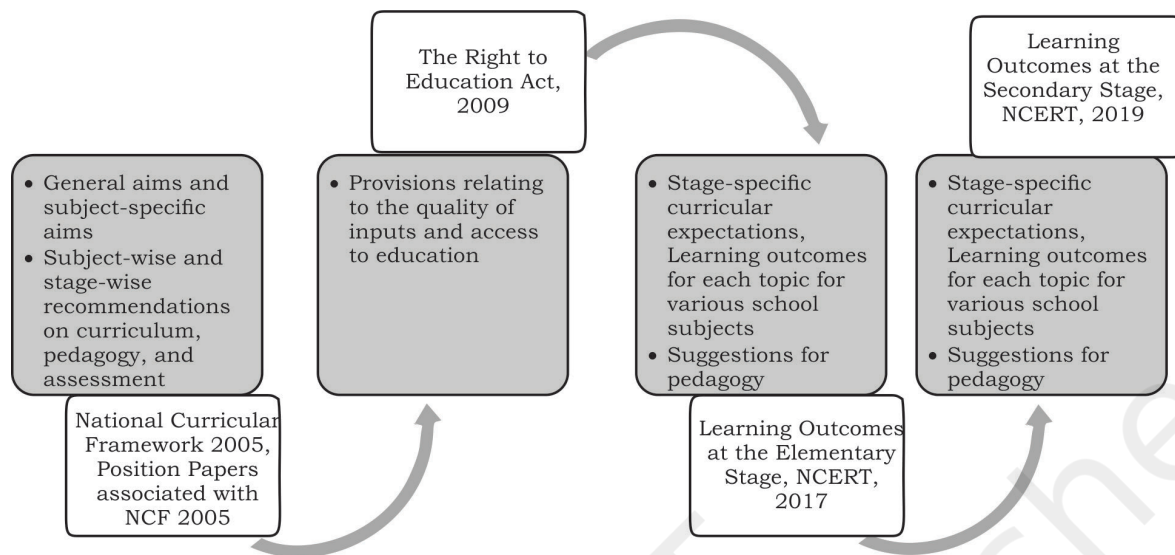


Figure 1: Standards-based Reforms in India

As a result of these reforms, several terms emerged for the curricula in the education systems. These terms include “proficiency-based,” “mastery-based,” “standards-based,” “competency education,” and “competency-based” curricula (Sturgis, 2014). In this paper, the term “standards-based” will be used consistently. The central idea of standards-based systems is to define standards, which are expectations of learning from students. Standards are the criteria against which the performance of students and stakeholders will be measured. Standards are defined in such a way that they articulate the same expectations for everyone while, at the same time, providing stakeholders with flexibility in materials and methods for meeting those expectations (Sharma, 2015; Tognolini & Stanley, 2007). Thus, standards ensure equity, accommodate diversity, and allow for autonomy at the same time.

Standards-based Reforms in India

The Indian education system has been taking steps towards standards-based reform for improving the quality of the education system. The National Curriculum Framework (NCF) 2005 by NCERT and its associated position papers articulated the general and

subject-specific aims of education. They also provided subject-specific and stage-specific recommendations on the features of good quality curricula, assessments, and pedagogy. The Right to Education (RTE) Act, 2009, came into being to enforce education as a fundamental right as enshrined in Article 21a of the Constitution of India. The RTE Act, 2009 specifies the need for providing good-quality education to children. However, the act has not provided clear and unambiguous standards for learning that have to be met to ensure good-quality education (Sharma, 2015).

As a step towards remedying the lack of specified standards, NCERT published curricular expectations and learning outcomes for children in Classes I to VIII in 2017. Learning outcomes for students in the secondary stage were published in 2019. Draft learning outcomes for the higher secondary stage have been published for the higher secondary stage as well.

The National Education Policy 2020 (MHRD, 2020) has articulated a vision of a standards-based system that will fundamentally revamp teaching-learning processes and assessments. The NEP 2020 envisages a combination of experimental learning, formative assessments, and

standards-based systems in improving the quality of student learning (MHRD, 2020, p. 12, para 4.6). The assessments, whether formative or summative, will be competency-based and aligned to the learning outcomes for the specified grade levels (MHRD, 2020, p. 17, para 4.34). These assessments will also rigorously test higher order skills such as analysis, critical thinking, argumentation, evaluation, etc. School exit examinations will become competency-based as well. They will focus more on testing core capacities and concepts than content (MHRD, 2020, p. 18, para 4.37).

As the reforms proposed by NEP 2020 are in the process of being implemented, it is important for all stakeholders of the education system to develop a basic understanding about standards-based systems. This paper is an attempt to unpack the meaning of a standards-based system through a discussion on some of its features, terminologies, and associated caveats. It discusses some important features, terminologies, and caveats associated with standards-based systems.

Features of Standards-based Systems

It is given that each country has a unique education system that has been shaped by historical, socio-political, and economic circumstances. However, there are some common features of standards-based systems around the world.

1. Having clear definition of standards

- One of the most important features of standards-based systems is the existence of standards. Standards are statements of curricular intent that specify what students should know and be able to do with respect to the

curriculum (Hamilton, Stecher, & Yuan, 2008; Print, 2020; Sharma, 2015; Tognolini & Stanley, 2007).

2. Aligning teaching-learning and assessment to standards

- Teaching-learning processes, curricular content, and assessments are aligned to and referenced against standards (Hamilton, Stecher, & Yuan, 2008; Print, 2020; Sharma, 2015; Tognolini & Stanley, 2007). A clear road map for student achievement pegged against standards helps ensure that stakeholders' efforts are not directed towards wasteful activities and resources, which ultimately result in poor educational attainment. At the same time, a standards-based system also allows for considerable stakeholder autonomy and accommodation of diversity. Teachers are free to use curricular materials and activities that suit their students' needs as long as those are well aligned with the standards (Rao & Meo, 2016; Sharma, 2015; Tognolini & Stanley, 2007).
 - Assessments are unique in standards-based systems in that they are usually criterion-referenced rather than norm-referenced (Sharma, 2015; Tognolini & Stanley, 2007). Student performance is reported relative to performance in standards as opposed to performance of other students.
- ### 3. Using standards for accountability purpose
- Administrative and governance activities are geared towards ensuring that students, teachers, and schools have the necessary resources and support for meeting standards

¹Murray (2020) has defined curriculum intent as follows:

Curriculum intent' is a term which is not widely used in the literature yet as a concept it is commonly and constantly applied in practice. It may be defined as the direction that curriculum developers wish learners to go as a result of participating in the curriculum. Curriculum intent incorporates the various forms of aims, goals and objectives found in curriculum documents which together provide directions that will hopefully be achieved by learners as they interact with the curriculum (p. 121).

(Hamilton, Stecher, & Yuan, 2008). Assistance is available to schools in the form of teacher training, capacity building, and financial provisions to ensure that schools are meeting

standards (Tognolini & Stanley, 2007). At the same time, accountability provisions are built into the system (Hamilton, Stecher, & Yuan, 2008; Tognolini & Stanley, 2007).

A Vignette from Haryana on the Use of Standards-Referenced Large-Scale Assessments in India

Source: Michael & Susan Dell Foundation, CSSL, ConveGenius, Central Square Foundation, EI, n.d.

Haryana has undertaken a programme called Saksham Haryana in 2017 to improve its academic performance. The state set a target of 80 per cent attainment of grade-level competencies in a standards-referenced large-scale assessment conducted with its partners EI and CGI. As a result of its reforms, attainment in grade-level competencies improved from 40 per cent in 2014 to 80 per cent in 2019.

One of the key ingredients of this programme's success was the involvement of the Chief Minister's Office, which created the Saksham Haryana cell in 2017 to monitor the programme. The Chief Minister and senior officials in the Education Department frequently reviewed the programme to monitor progress.

The other ingredient for success was ensuring decentralised accountability by making teachers, school principals, and block-level officers responsible for results. Officials who achieved the Saksham status were recognised and rewarded, and best practices were disseminated to others.

Teaching, learning and assessment was referenced to a competency framework called Saksham Taila, which was based on the NCERT Learning Outcomes for the Elementary Stage document. The competencies were presented in an easy-to-use manner that would help teachers track progress and map resources.

There was frequent communication at the school, block, district, and state levels. WhatsApp groups and channels were widely used to establish two-way communication. Thus, this enabled easy and frequent monitoring for the programme, while enabling quick access to support.

Terminology Used in Standards-based Systems

In most standards-based systems, some common terms are used. These terms are statements of curriculum intent and are as follows: aims, competencies, goals, learning outcomes and instructional objectives. The terms have been defined and explained below.

1. Aims

They are broad, non-technical and encompassing statements of curriculum intent and are long-term in nature. They specify the end results of a long period of schooling and often reflect societal aims and desires (Print, 2020).

In India, NEP 2020 has laid out the following aims of school education:

to develop good human beings capable of rational thought and action, possessing compassion and empathy, courage and resilience, scientific temper and creative imagination, with sound ethical mooring and values. It aims at producing engaged, productive, and contributing citizens for building equitable, inclusive, and plural society as envisaged by our Constitution (MHRD, 2020, pp. 4–5).

2. Competencies

There is no one single definition of competencies. However, competencies can be understood as broad and domain-general sets of knowledge, dispositions, and skills required for attainment in all domains of the curriculum (Gouëdard, Pont, & Huang, 2020; Looney, 2011a; NCERT, 2005). Some

examples of competencies include critical thinking, argumentation, information-gathering, and self-management (Gouëdard, Pont, & Huang, 2020). The following text box obtained from Looney (2011a) provides some more examples of how competencies have been conceptualized in other countries. Competencies are embedded in the aims of the curriculum and have a long-term nature.

Box 2. Defining competences - Selected examples from European Countries

European countries define comprehended in a variety of ways. These different approaches have implications for how learning assessed.

- Austria defines “dynamic skills” (Dynamische Fertigkeiten), which are transversal, and not tied to specific subjects.
- Finland has introduced the concept of “themes” i.e. challenges with social significance.
- France defines the foundation (socie) competences s including both subject-based and cross-curricular competences.
- Germany defines subject-independent, general competences essential for learners personal and working lives. The key competences apply to different subjects and subject areas are useful for solving complex tasks in real-life contexts, and are transferrable to situations not covered in the curriculum.
- Greece has introduced in interdisciplinary cross-curricular thematic framework (DEPPS). Linkage all subjects horizontally.
- Hungary defines competences as “capabilities”, values are included in the capabilities (i.e. the capability to understand and apply norms and values).
- In Italy, schools help each primary school student to define his or personal competences in each subject and cycle.
- The Netherlands defines “core objectives” related to specific subjects and “general objectives” (cross curricular).
- Portugal has introduced essential competences – that is the development of skills and attitudes helpful for using knowledge in different situations.
- Slovenia defines key competences in thematic fields (e.g. learning to learn, social skills, ICT entrepreneurship, environmental responsibility, etc).
- Sweden defines “steering through goals”, including goals to strive for and goals to be attained. Goals represent a broad range of developmental goals, and cover all aspects of education. Sweden does not use the term “competences”.
- Across the United Kingdom and in Ireland, the terms “skills”, “core skills” and “key skills” are used. There is a strong emphasis on personal “capabilities” (Northern Ireland) and on the need for young people to become active members of society (Scotland). England emphasis skills for independent thinking creativity, team work and effective participation, and self-management.

Source Gordon et al, 2009

3. Goals

They are statements of curriculum intent that are derived from aims. They are

generally medium to long term in nature and phrased in a non-technical language. Goals are framed for broad areas of content and skills in the curriculum(Print, 2020).

In India, goals are defined for each curricular stage in each subject of the curriculum. These goals are called curricular expectations in India and are listed in the NCERT learning outcomes documents(NCERT, 2017, p. xi).

For instance, consider the curricular expectations for EVS in the primary stage (Classes III to V): They are as follows:

- Acquire awareness about immediate/wider surroundings through lived experiences on various themes related to daily life, e.g., family, plants, animals, food, water, travel, and shelter, etc.; nurture natural curiosity and creativity for the immediate surroundings.
- Develop various processes/skills, e.g., observation, discussion, explanation, experimentation, logical reasoning, through interaction with immediate surroundings.
- Develop sensitivity for the natural, physical and human resources in the immediate environment.
- Point out and raise issues related to equality, justice and respect for human dignity and rights.

The curricular expectations for science in the upper primary stage (Classes VI to VIII) are as follows:

- Scientific temper and scientific thinking
- Understanding about the nature of scientific knowledge, i.e., testable, unified, parsimonious, amoral, developmental and creative
- Process skills of science which includes observation(s), posing question(s), searching various resources of learning, planning investigations, hypothesis formulation and testing, etc.
- Appreciation for historical aspects of evolution of science
- Sensitivity towards environmental concerns
- Respect for human dignity and rights, gender equity, values of honesty, integrity, cooperation and concern for life

By comparing the curricular expectations for the primary and upper primary stages, it is possible to identify both continuity and change. In both stages, the emphasis on inculcating values such as sensitivity, respect for others' dignity and rights, care for the environment, and a sense of justice remains, although the dimensions of these values deepen in the upper primary stage. Both stages also focus on imparting process skills, but the process skills become more subject-specific in the secondary stage. There is a departure from developing general awareness and generic concepts to developing understanding of subject-specific concepts. There is also a focus on the question of how knowledge in the sciences is generated in the upper primary stage, unlike the primary stage. To sum up, the extent of abstraction in both the content and the processes increases from the primary to the upper primary stages.

4. Learning Outcomes

Learning outcomes are assessment standards or benchmarks for assessing educational achievement (NCERT, 2017). Learning outcomes are derived from aims and goals(Print, 2020). Learning outcomes specify the knowledge, skills, abilities, attitudes, and understanding that learners

would have attained after engaging with a relatively narrow area of the curriculum, which may be a unit, module, chapter, or concept (Adam, 2006). To illustrate the scope of learning outcomes, the following Grade 1 Measurement and Data Mathematics standards from the Common Core (n.d.) are provided. As is apparent, the standards cover relatively narrow areas of the curriculum,

attain at the end of a period of instruction in a curriculum (Anderson, et al., 2001). For instance, the Common Core standards depicted above specify that at the end of Grade 1, students should be able to measure

lengths indirectly and by iterating lengths, tell and write time, and represent data in simple categories. Thus, learning outcomes set standards for educational attainment in a system.

Measure length indirectly and by iterating length units

CCSMATHCONTENT1MDA1

Order three object by length; compare the length of two objects indirectly by using a third subject.

CCSSMATHCONTENT 1MDA2

Express the length of an object as whole number of length units, by laying multiple copies of a shorter objet (the length unit) end to end: understand that the length measurement of an object is the number of same-size length units that span it without no gaps or overlaps. Limit to contexts where the object being measure is spanned by a whole number of length with no gaps or overlaps.

Tell and write time,

CCSSMATHCONTENT1DB3

Tell and write time in hours and half-hours using analogue and digital clocks
Represent and interpret data.

CCSSMATHCONTENT1MDC4

Organize, represent and interpret data with up to three categories; ask and answer questions about the total number of data points. how any in each category, and how many more or less are in one category than in another

Source: <http://www.corestandards.org/Math/Content/1/MD/>

However, learning outcomes are framed in away that (a) they have been arrived at by broad consensus; (b) they are reflective of the aims of education; and (c) they are flexible enough to allow teachers to use their own methods of transacting the curriculum (Sharma, 2015; Tognolini & Stanley, 2007; Rao & Meo,

2016). In India, NCERT's learning outcomes documents contain the learning outcomes for all the topics in each subject and grade. The following excerpt illustrates a sample of two learning outcomes for Class VIII English from the NCERT *Learning Outcomes at the Elementary Stage* document (NCERT, 2017).

A Sample of Class VIII English Learning Outcomes from NCERT's *Learning Outcomes at the Elementary Stage*

The learner—

- Respond to instructions and announcements in school and public places viz., railway station, market, airport, cinema hall, and act accordingly.
- Introduces guests in English, interviews people by asking questions based on the work they do.

A revised version of Benjamin Bloom's taxonomy of cognitive, affective, and psychomotor domains provides a useful framework for writing learning outcomes. Action verbs providing evidence of measurable and demonstrable learning at various levels of cognitive, affective, and psychomotor processes can be used to frame learning outcomes (Anderson, et al., 2001).

5. Instructional Objectives

Learning outcomes can be broken down further into instructional objectives. According to Anderson, et al. (2001), the scope of instructional objectives is to teach and test "narrow day-to-day slices of learning in fairly specific content areas" (p. 16). There is one word of warning. Instructional

objectives must not be conflated with a single teaching activity or an assignment topic. Instead, an instructional objective can be addressed in many ways through classroom activities and assignment topics. For instance, the following excerpt from the

Principal's/Teachers' Consultation for CBSE Learning Standards frameworks (CBSE Academics & Trainings, 2022) illustrates how a learning outcome can be broken down into instructional objectives.

Content Domain, Chapter, Key concepts (Chemistry – Class X)	Learning Outcomes – NCERT	Content Domain Specific Learning Outcome	Instructional Objectives
Materials Chapter 5 – Periodic Classification of Elements Key Concepts Classification of elements –Dobereiner's triads, Newlands' law of octaves, Mendeleev's Periodic table, Modern Periodic table; Position of elements in the modern periodic table, trends in the modern periodic table – atomic size, valency, metallic/non-metallic character.	Explains processes and phenomena, such as nutrition in human beings and plants, transportation in plants and plants, extraction of metals from ores, placement of elements in modern periodic table, displacement of metals from their salt solutions on the basis of reactivity series, working of electric motor and generator, twinkling of stars, advance sunrise and delayed sunset, formation of rainbow, etc.	Explains the features of modern periodic table and reactivity of elements based on their position in periodic table.	Explains the arrangement of elements in Modern Periodic Table based on increasing order of atomic number. Explains periodicity of properties of elements like atomic size, valency, metallic character across periods and down groups in the Modern Periodic Table. Explains how the reactivity series of metals is linked to their atomic structure and position in the Modern Periodic Table.

Definitions of Key Terminologies

Aims are broad, non-technical and encompassing statements of curriculum intent and are long-term in nature (Print, 2020). They specify the end results of a long period of schooling and often reflect societal aims and desires (Print, 2020).

Competencies can be understood as broad and domain-general sets of knowledge, dispositions, and skills required for attainment in all domains of the curriculum (Gouédard, Pont, & Huang, 2020; Looney, 2011a; NCERT, 2005).

Goals are statements of curriculum intent that are derived from aims (Print, 2020). They are generally medium to long term in nature and phrased in a non-technical language (Print, 2020). Goals are framed for broad areas of content and skills in the curriculum (Print, 2020).

Learning outcomes are specific statements of curricular intent that are derived from aims and goals (Print, 2020). Learning outcomes specify the knowledge, skills, abilities, attitudes, and understanding that learners would have attained after engaging with a relatively narrow area of the curriculum, which may be a unit, module, chapter, or concept (Adam, 2006).

Instructional Objectives are statements of curricular intent whose scope is to teach and test “narrow day-to-day slices of learning in fairly specific content areas” (Anderson et al., 2001, p. 16).

Some Caveats Associated with Standards-based Systems

In theory, standards-based systems have a revolutionary approach of alignment for focusing the efforts of all stakeholders in an education system and hence increasing the system's efficiency. However, there are some caveats associated with standards-based systems. As India is moving towards a standards-based education system, it will be useful to have an understanding of certain issues that hamper the efficacy of such systems. Many of these caveats are based on research that has happened in the United States and have been discussed far more elaborately in Hamilton, Stecher, and Yuan (2008).

To begin with, defining standards has been difficult, and efforts to define standards have been contentious. Reaching consensus for criteria on evaluating standards has also been difficult. Thus, there is a need for robust mechanisms to develop and evaluate standards.

In many states in the US, high-stakes, annual standardised tests are given to students of certain transition grades. These standardised tests have been criticised for testing low-level and easily assessable areas of the curriculum, as opposed to the more cognitively challenging standards. The narrowness of testing has implications for the validity of inferences about student attainment with reference to standards.

The results of standardised tests have high stakes for teachers and administrators in a school (Bellwether Education Partners, n.d.). Schools that underperform consistently across years are subject to various interventions based on the duration and extent of their underperformance. Reforms can range from district intervention in terms of training and staff support, to replacement of school leadership and teaching staff, to conversion of public schools to charter schools, and, finally, school closure (Bellwether Education Partners, n.d.).

There is some evidence that these accountability provisions have helped improve school performance. However, they also create pressures for teachers to "teach to the test". Teachers may focus more on test performance than performance relative to standards. So, they may rely on strategies like familiarising students with item formats, focusing on widely tested standards, and using drill-and-practice methods. Administrators may also direct more funding and support to the widely tested subjects and curricular areas and neglect those that are important but don't feature in high-stakes assessments. Thus, high-stakes tests have a distortionary effect on teaching and classroom instruction in a standards-based system.

Conclusion

The central idea of standards-based systems is to define standards, which are expectations of learning from students. Standards are the criteria against which the performance of students and stakeholders will be measured, and they are defined in such a way that they articulate the same expectations for everyone while, at the same time, providing stakeholders with flexibility in materials and methods for meeting those expectations. Thus, standards ensure equity, accommodate diversity, and allow for autonomy at the same time.

Standards-based systems have many features that make them desirable for improving the quality of education. The idea is that pegging student achievement and activities of stakeholders ensures that education systems achieve their aims efficiently. However, for standards-based systems to work well, standards should be defined clearly and coherently. High-stakes assessment should not distort the activities of stakeholders or provide misleading pictures of student achievement either. Standards-based systems should achieve a good balance between accountability and support to work.

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