Evaluation and Program Planning 35 (2012) 222–235

Contents lists available at SciVerse ScienceDirect

Evaluation and Program Planning

journal homepage: www.elsevier.com/locate/evalprogplan

An application of the Impact Evaluation Process for designing a performance measurement and evaluation framework in K-12 environments

Ingrid Guerra-López [a,*], Sacip Toker [b,1]

[a] Instructional Technology, Institute for Learning & Performance Improvement, Wayne State University, 393 College of Education, Detroit, MI 48202, United States
[b] Wayne State University, Instructional Technology Department, Detroit, MI 48202, United States

ARTICLE INFO

Article history:
Received 27 February 2011
Received in revised form 6 July 2011
Accepted 3 October 2011
Available online 19 October 2011

Keywords:
Evaluation
Performance management systems
Performance indicators
Performance improvement
Educational informatics

ABSTRACT

This article illustrates the application of the Impact Evaluation Process for the design of a performance measurement and evaluation framework for an urban high school. One of the key aims of this framework is to enhance decision-making by providing timely feedback about the effectiveness of various performance improvement interventions. The framework design process is guided by the Impact Evaluation Process, and included the participation of key stakeholders including administrative and teaching staff who all contributed to the performance measurement and evaluation framework design process. Key performance indicators at the strategic, tactical, and operational levels were derived from the school vision, and linked to specific interventions to facilitate the continuous evaluation and improvement process.

1. Introduction

Concern for performance results and accountability has become ubiquitous (Radin, 2006). U.S. President Barrack Obama, through his Race to the Top Fund, has recently made assessment, evaluation and performance data systems a top funding priority in education (U.S. Department of Education, 2010). Moreover, in recent years, K-12 environments have seen a proliferation of district and school-level report cards primarily illustrating student learning outcomes, typically, test scores. These measures are in turn intended to provide feedback for school improvement initiatives (Ladd & Walsh, 2002). However, these report cards tend to lack clear linkage between the various school improvement initiatives, en-route results, and ultimate outcomes. Without this clear linkage, it becomes particularly difficult to determine specifically what initiatives are contributing to observed outcomes and in what ways, and therefore, we lack the necessary feedback for timely modifications and improvement. This kind of data can be provided by the ongoing measurement and evaluation of a complete and relevant set of performance indicators through an integrated system.

A critical role of organizational leaders is decision making. With this role comes pressure and risk, and the greater the consequences, the greater the pressure and the higher the risk. Hence, decision makers may find themselves caught between analysis paralysis and a rush to judgment. Classical mathematical probability decision theories would have us analyze, assess, calculate, predict, and do all sorts of analytical, rational, deliberate machinations before making decisions. However, this ideal process can be quite impractical in a fast-paced world (Guerra-Lopez & Norris-Thomas, 2011). At the other extreme, decision-makers may rely more on their opinions of their intelligence, power, and confidence than on the realities of the situation. And the outcomes of such over-confident, evidence-void, snap decisions can be disastrous (Anderson & Kilduff, 2009; Campbell, Goodie, & Foster, 2004). Clearly, neither exhaustive analyses nor snap judgments are conducive to timely yet sound decision making. Instead, decisions typically are made under some degree of uncertainty (See, 2009). Despite such realities, effective leaders are capable of making sound decisions based upon sound data, produced by a responsive evaluation approach.

Evaluation can provide a systematic and systemic framework that aligns stakeholders, evaluation purposes, desired outcomes, and all evaluation activities, so that the evaluation product is a responsive and clear recipe for improving performance. This allows the decision-making process to be more clear and straightforward. In other words, evaluation is a key mechanism for providing decision-makers with feedback, whether formatively (ongoing measurement and tracking of progress toward ultimate goals, and relevant revisions) or summatively (data about final results, conclusions, and future action).

Williams (2011) compared the performance of schools that used this type of measurement system (e.g. balanced scorecard) to

* Corresponding author. Tel.: +1 248 910 6116; fax: +1 313 577 1693.
E-mail addresses: ingrid.guerra-lopez@wayne.edu (I. Guerra-López), saciptoker@gmail.com (S. Toker).
[1] Tel.: +1 313 645 7112; fax: +1 313 577 1693.

0149-7189/$ – see front matter © 2011 Elsevier Ltd. All rights reserved.
doi:10.1016/j.evalprogplan.2011.10.001

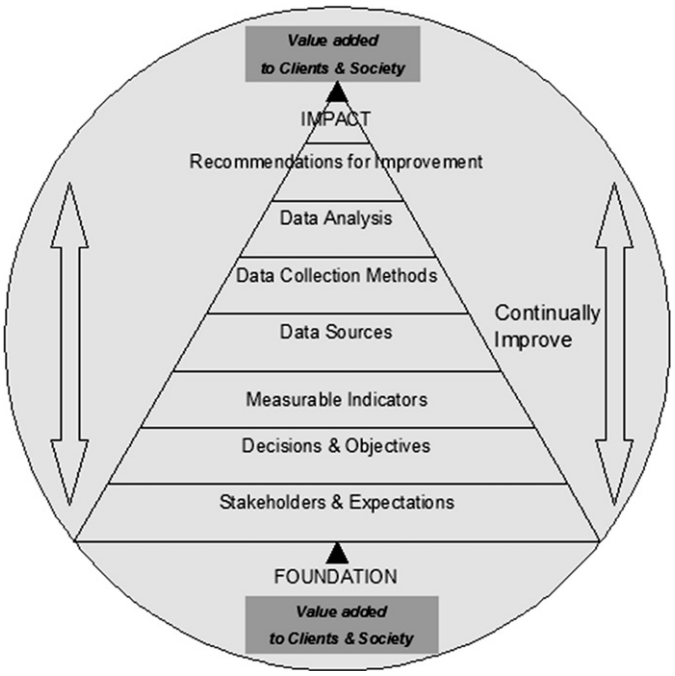

Fig. 1. Impact Evaluation Process.

the schools that did not use balanced scorecards and found that the balance scorecard school outperformed the non-balanced scorecard schools in some student achievement scores (albeit not all scores). The balanced score card schools were also found to have superior leadership and more effective professional teacher behaviors. Kaufman (2011) concluded that the performance measurement and management system should provide trustworthy and necessary data and information to stakeholders, including teachers. Moreover, feedback loops are required and they should provide timely, often, and easily accessible information.

This case study illustrates the design of a performance measurement and evaluation framework for an urban high-school using the Impact Evaluation Process (Guerra-López, 2007) as a conceptual framework (Fig. 1).

2. Conceptual framework

The Impact Evaluation Process is an evaluation framework that illustrates each of the major steps in a systemic and systematic performance-based evaluation. Dyehouse, Bennett, Harbor, Childress, and Dark (2009) found that (1) system-based processes produced better and more effective solutions than logic or linear causal models; (2) prevented erroneous relations which might manipulate the results of an evaluation; and (3) helped evaluators predict program factors and outcomes more effectively.

Moreover, the term 'impact' is considered from a system perspective (Bertalanffy, 1968), and is used to refer to the ultimate results and benefits produced by an organization to its environment, with the aid of that which is being evaluated. Specifically, impact deals with societal value add results, or what Kaufman (2006) calls societal consequences produced by the organization.

Table 1 briefly describes each of the steps in the Impact Evaluation Process (Guerra-López, 2007). It is important to note that *alignment* of all elements is fundamental to the utility of this methodology.

As with every tool, there are certain conditions that are conductive to its successful implementation. In this case, establishing buy-in from key stakeholders is critical as the work team will require authority, access and resources to design the performance measurement and evaluation framework. Additionally, this group should provide criteria for success, as well as timely feedback and guidance. In the absence of this, it is possible that the design process and product will not meet the needs and expectations of stakeholders.

Also important is careful consideration of goals, objectives, performance indicators and targets in the context of strategic, tactical, and operational levels of results. This allows stakeholders to understand the hierarchy and relationships among the various results they are accomplishing, and what factors are impacting such results. In turn, this understanding better positions decision-makers to relevant information for efficiently and effectively improving performance.

Availability of resources and expertise is another important consideration. In selecting the data collection and maintenance procedures and schedules, the organization will want to consider not only the ideal approach, but also current and future availability of money, time, expertise, and other organizational realities.

3. Context

Tessmer and Richey define context as "a multilevel body of factors in which learning and performance are embedded." (1997, p. 87). Contextual factors include physical, social and instructional aspects that are mutually interacting and guide learning. The context for this application is an urban technical high school, which had received funding from a non-profit foundation to implement a large initiative in the past. One condition for further funding was strengthening the school's evaluation capabilities.

The school was established in 1991 as a school of choice to ensure that students graduating high school would be equipped with solid academic and technical skills. Students electing to attend the high school commit to participate in rigorous academic and career training. In addition to district graduation requirements, students attending the high school must complete additional math requirements and a two-year training program at a Career and Technical Center. The vision and mission of the school appear below:

Vision:
To graduate responsible, self-directed and career oriented young men and women with solid academic and technical skills who can adapt to the changing and emerging technologies to successfully enter into employment and/or post secondary education and training. This will be accomplished in a safe environment by providing rigorous, relevant learning experiences and positive character development.
Mission:
We are dedicated to the belief that a student is the most important and valued person in the school. We are committed to providing students with rigorous and relevant academic and technical training in a nurturing environment that supports positive interactions and relationships to help students achieve to their full potential.

4. Methods and procedures

Following a development research design approach (Richey & Klein, 2007), a performance measurement and evaluation framework for continuous improvement was designed to support decision-making of the administration and teachers with key administrative responsibilities for a given program. The activities performed in each step are described below.

Table 1
A seven-step process for evaluating impact.

Evaluation steps	Description
1. Identify stakeholders and expectations	The evaluator must identify the key stakeholders involved. The stakeholder groups include those who will be making decisions either throughout the evaluation process, or directly as a result of the evaluation findings. Those with the authority to make critical decisions are often the ones who finance the evaluation project, but if it is someone or some group different, they too should be included. Also important are those who will be affected by the evaluation—either in the process, or potentially as a result of the findings. Including this group will make the implementation of the evaluation plan a lot easier, particularly during the data collection stage. The driving question for identifying stakeholders is *who is/could be either impacted by the evaluation, or could potentially impact the evaluation in a meaningful way?* While not every single stakeholder must be directly involved as part of the evaluation project team, each group should be represented. Clarifying stakeholder expectations is also a preliminary and required aspect of evaluation. If stakeholder expectations are not clarified, then doubtfully will the evaluation team be able to meet those expectations. Expectations for both the evaluation, and the evaluand (i.e. that which is being evaluated), must be clarified by and for all
2. Determine key decisions and objectives	Asking the stakeholders to articulate what types of decisions will be made as a result of your findings is a primary step. This discussion must include key goals and objectives internal and external to the organization. All organizations' external objectives (i.e. impact) and everything within the organization must contribute toward those objectives (Guerra, 2005). The relative worth of any intervention or solution is primarily contingent on whether it is helping or hindering the achievement of organizational objectives. The evaluator must help stakeholders articulate and agree on these objectives and decisions points, as they will be foundational for formulating evaluation questions and purposes
3. Deriving measurable indicators	Sound decisions are made on the basis of relevant, reliable, valid, and complete data related to desired results, and the related questions we want to answer. Therefore, the heart of your evaluation plan will be to gather the data required to answer the questions that guide the inquiry. People often end up making judgments based on wrong or incomplete data, particularly when they try to force connections between inappropriate data (just because they happen to be available) and the decisions that must be made (Kaufman, Guerra, & Platt, 2006). The data that must be collected are essentially about performance indicators. Indicators are observable phenomena that are linked to something that is not directly observed and can provide information that will answer an evaluation question
4. Identifying data sources	With a list of specific indicators for which to collect data, you must first determine where you can find those data. The required data points to the appropriate source. You can likely find the data that you are looking for right in your own organization. Existing records about past and current performance may already be available, but collected by different parties in your organization and for different reasons. Some excellent sources include strategic plans, annual reports, project plans, consulting studies, performance reports, to name a few. The internet and other technologies are quite useful for accessing reports, documents, databases, experts, and other sources like never before possible. A number of companies, government agencies and research institutions, nationally and internationally publish electronically a series of official studies and reports that could prove to be valuable sources of data
5. Selecting data collection instruments	The right data collection methods and tools are a function of the data you are seeking. Likewise, the data you collect is a function of the methods you select. When evaluators limit the data they collect by employing an overly narrow set of observation methods because they do not know how to use others, their data set will not be complete, and in turn, their findings may be misleading. There is extensive literature about data collection methods. Selection should be made based on pros and cons, specifically with regards to important criteria such as appropriateness of the instrument for the required data, time, characteristics of sample, comprehensiveness of tool, previous experience with tools that are being considered, and feasibility among others
6. Selecting data analysis tools	While the data analysis is often thought to be mere 'number crunching' it is more than that. The analysis of data as part of an evaluation effort is the organization of information to discover patterns and fortify arguments used to support conclusions or evaluative claims that result from your evaluation study. In a nutshell, we are merely summarizing large volumes of data into a manageable and meaningful format that can quickly communicate its meaning. In fact, one might say that the analysis of the data begins even before its collection by virtue of analyzing the characteristics of the required data, as we do before we select the methods for data collection
7. Communication of results and recommendations	The importance of effective communication cannot be overstated. A rigorous evaluation does not speak for itself. Communicating with key stakeholders throughout the evaluation process keeps them aware of what you are doing and why, which in turn increases the amount of trust they place in you and your efforts. In addition, it allows them the opportunity to participate and provide you with valuable feedback. By the time the final report and debriefing come along, these products will not be seen as something imposed on them, but rather as something that they helped create. With this type of buy-in, resistance to the findings and recommendations will likely be lower

4.1. Step 1: identification of stakeholders and their expectations

A key foundational step in any evaluation and performance measurement effort is identifying stakeholders. A stake is essentially a claim, an interest, or a share in some endeavor. These claims, or interests, can be financial, legal, or moral (Guerra-López, 2007; Caroll, 2000). In this sense, a stakeholder is any individual or group who has a stake in an endeavor and can either affect or be affected by the decisions and actions of the organization. Not every individual within each stakeholder group has to participate in an evaluation directly, but it is important that those who will participate be seen as representative by their group members. This will give all affected a sense of involvement, even if through a vicarious experience. The greater the sense of stakeholder involvement and influence, the less resistance there will be to the evaluation process, its findings, and the implementation of action-based recommendations. One of the things that made this project unique is that an evaluation was not being carried out at a particular point in time. What was being developed was a framework that would allow users to conduct ongoing monitoring and evaluation across various initiatives, based on established objectives. This formative approach (Scriven, 1967)

could be used to track the alignment of various proposed initiatives to the school, district, and state objectives and standards, as well as the appropriateness of the various proposed and implemented initiatives. Thus, the specific stakeholders for any given initiative could be somewhat different, though in a school setting, students, parents, teachers, administrators, and the community are all key stakeholders.

Quite conducive to the successful development of this framework was the buy-in from key stakeholders, who were well engaged throughout this process. All groups were informed and involved in some way, thereby providing required authority, access, and resources to develop the framework.

One of the primary goals of the framework is to help the school administration make sound decisions based on relevant, reliable, valid, and complete data (Guerra-López, 2007; Guerra-Lopez & Norris-Thomas, 2011). The administration group includes the school principal, the assistant school principal, and the initiative coordinator. The second group of stakeholders was composed of teachers, some of which are initiative leaders and others who participate in the initiative in some way. The teacher leaders are responsible for arranging meetings, executing projects, communicating with teachers involved with a given initiative and coordinating any other tasks related to project management. Other teachers are responsible for implementing tasks assigned to them by intervention leaders (summary of stakeholder responsibilities is illustrated in Table 3). The parents are crucial for making connections between the school and community, and students are of course the primary beneficiaries of school initiatives and an essential source of input and feedback. Each group has critical responsibilities for the decision-making process. The evaluation framework must help connect their expectations in terms of explicit objectives and measurable indicators with specific initiatives thereby, supporting sound decisions about which initiatives to implement, which are effective in reaching expectations, which require modification and how, and which should no longer be supported. This hierarchical structure is critical for communication, clarification, and attainment of strategic aims (Aranda & Arellano, 2010). Moreover, the timely tracking of en route performance indicators will ensure efficient progress toward the school's vision and mission.

4.1.1. Clarifying expectations and identifying desired external impact on society

Every organization has expectations about their future, whether formally expressed as a vision or not. This future includes the ultimate goals the organization wants to reach, and in turn, these long-term goals must be further examined in terms of specific long-, mid-, and short-term objectives and specific measurable indicators. Kaufman's Organizational Elements Model (1981, 2006) provides a conceptual framework for aligning organizational results at every level: strategic, tactical, and operational. This framework calls for all organizational ends and means to start with the ultimate end in mind, i.e. what contributions do we commit to deliver to society, and work backwards from there to determine what en-route results must be achieved, and through what means. Kaufman argues that the ultimate, strategic-level result of an organization is expressed as an ideal vision, and it includes the impact the organization seeks to make on society (e.g. high-school students who go on to college or gainful employment). From this general ideal vision, a precise mission statement is derived and used to guide the organization's direction.

Generally, organizations, whether educational or otherwise, vary in their understanding and application of the concepts of vision and mission development. For example, not all visions are stated in terms of results, nor are they always linked to external impact on society. Likewise, mission statements are not always derived directly from the vision, and used to operationally define it (Guerra, 2005). In this case, the authors used the current school vision and mission included in the school improvement plan (SIP) to identify the school's desired ultimate goals. These ultimate goals, and their measures, are the basis for measuring ultimate impact. In other words, the overarching evaluation question would be, "what impact did we have over the ultimate goals we set for ourselves?"

The SIP is a document created by a school committee that includes general and special education teachers, assistant principals, the principal, a curriculum leader, parents, and a student member with the purpose of submitting the school's 3-year strategic plan to the school district. The plan is then approved by the school district and Board of Education and then used to evaluate school performance, which in turn influences the budget and other types of support. Additionally, four major improvement areas were identified in the SIP: English Language Arts, Math, Science and Technology, each having its own goal and each goal divided into action steps. Table 2 illustrates key components of the improvement plan for each area.

Not surprisingly, the SIP was a key source of data for understanding and clarifying the school's vision, mission, beliefs, measurable objectives, and action plans that would become the foundation for the evaluation and continual improvement framework.

The SIP was also instrumental in identifying long-term performance goals, gaps, priorities, and other areas with improvement potential, as perceived by the school stakeholders. The authors analyzed the vision and mission in order to derive a relevant and complete set of measurable indicators that were to be used not only for monitoring and evaluation, but also for timely performance management and decision-making. In the process of analysis, the authors noted alignments and misalignments between specific vision and mission indicators, and specific operational goals and initiatives, as well as resources.

Overall, the SIP had its benefits and challenges. One of the benefits of this document is that it can be a useful planning vehicle for school administrators who do not have formal strategic planning, performance management, or program evaluation expertise. It does this by providing an opportunity for school administrators to identify specific goals they commit to deliver, and quantifiable gaps to use as a key criterion to judge whether the goal has been met. Moreover, it also requires that relevant initiatives be identified and linked directly to specific goals. One of the challenges, however, is that the specific goals and targets may be generic, and moreover, not based on needs assessment data. A potential consequence of this is misguided decisions about what goals to pursue and what initiatives to implement in order to reach those goals. In this case, the goals in three of the four improvement areas called for a generic increase of at least 10%, based on State targets. This target is the same for any school in the state, perhaps being more appropriate for some than others. As can be seen in the SIP illustration table above, the gaps identified for each of the areas is significant, and much larger than 10%, which could represent a missed opportunity. While it does indicate this as a minimum target, the meta message is to shoot for 10%.

Another important challenge was ensuring that the SIP was considered in the appropriate context. While the vision and mission focus on the external impact the school commits to deliver to its community, what Kaufman (2006) would call the Mega, or strategic level of results, it is imperative that specific measurable indicators be identified and also tracked (e.g. number of students who go on to college and number of students who are gainfully employed). This would provide a basis for also identifying the most important results and indicators at the tactical, or Macro, level that support the strategic results. This level is about the direct results of the school (e.g. graduation rates and dropout rates). Finally, the

Table 2
Illustration of SIP information.

	English Language Arts	Science	Mathematics	Technology
Goal	Every year from 2007 to 2011 students will meet English Language Arts proficiency as defined by the State target by increasing at least 10% the number of students proficient	Every year from 2007 to 2011 students will meet Science proficiency as defined by the State target by increasing at least 10% the number of students proficient	Every year from 2007 to 2011 students will meet Mathematics proficiency as defined by the State target by increasing at least 10% the number of students proficient	Every year from 2007 to 2011 students will accelerate their learning with the use of innovative, digital tools to help them live, learn and work in this digital age
Actual	Only 16% of the students are scoring proficient in ELA. 8% of grade 11 students were proficient at writing. 32% of grade 11 students proficient at reading	12% of the school's students proficient in Science. The areas of greatest need are constructing and reflecting on scientific knowledge	Areas on need included: equations, expressions, figures and properties, and univariate data distributions	Baseline not identified
Causal factors	Inconsistencies in instruction	Inconsistencies in instruction	Inconsistencies in instruction	No causes identified
Measurable targets	A reduction of at least 10% in the percentage of students who did not meet state standard ELA scores in the previous year	A reduction of at least 10% in the percentage of students who did not meet state standard Science scores in the previous year	A reduction of at least 10% in the percentage of students who did not meet state standard Mathematics scores in the previous year	No measurable target defined
Action steps[a]: • Responsible staff • Timeline • Resources • Monitoring • Evidence of success	Staff will read "Classroom Instruction that Works" Entire Staff • September–March 2008 • Books • Survey of staff by SIP team • Results of the survey	Increase practice constructing and interpreting graphs • All teachers • September–June 2011 • No resources identified • Survey of staff by SIP team • Results of the survey	Provide instruction that integrates cooperative learning and technology • All teachers • September–June 2011 • No resources identified • SIP team will review agendas and monitor instruction • Walkthrough documentation and lesson plans	Create electronic student portfolios • Entire staff • September–June 2011 • No resources identified • Administration will monitor lesson plans and look for evidence • Student portfolios and lesson plans
Monitoring and evaluation (criteria for success will include)	Increased student achievement by formative and summative assessment including several practice standardized tests and surveys	Increased student achievement by formative and summative assessment including several practice standardized tests and surveys	Increased student achievement by formative and summative assessment including several practice standardized tests and surveys	Increased student achievement by formative and summative assessment including several practice standardized tests and surveys

[a] Due to space limitations, only one example is presented here.

operational, or Micro, level of results is about the specific results, internal to the school. For example, each of the 'improvement areas' identified in the SIP are essentially about building-block results (Kaufman, 2006) that when well coordinated, add up to the attainment of school-level results, and in turn, deliver the positive societal consequences promised in the vision.

Establishing these kinds of linkages is critical for prioritizing needs (or gaps in results) and making sound decisions about which needs to tackle first, and how to best meet those needs. In this case, these linkages were not immediately apparent, and thus represented a fundamental task to be accomplished. The development of the evaluation and continual improvement framework required the team to make these linkages explicit by discussing these concepts with key stakeholders and their importance, getting feedback about how these areas related to their vision, and building consensus for moving forward with the established linkages. It is important to note that stakeholders' perceptions about their importance vary. For example, a school principal might see the value of linking internal initiatives directly to school graduation rates and to the eventual college admission, graduation, and job placement because she or he is ultimately responsible for what the school delivers and demonstrating positive results, while a teacher might see more immediate relevance and urgency in improving performance on his/her subject area, because that is what he or she is most directly responsible for. The key is understanding that each stakeholder looks at a situation from their unique vantage point, based on the sets of expectations and consequences they face.

4.2. Step 2: determining key decisions and objectives

Once stakeholders have been identified, they must collaboratively determine the key decisions that the evaluation and continual improvement framework will support. One of the pitfalls of conventional performance measurement systems (e.g. dashboards) is that while they may warehouse large volumes of data, these data are not clearly linked to critical decision points or the decision-maker's job responsibilities, and therefore, they are often not always effectively used to enhance the decision-making and performance management processes (Guerra-López, 2010).

Interviews were conducted with key decision-makers, including the principal, other high level administrators, and teachers who were the leaders of specific initiatives. The interviews with the principal were aimed at understanding the long-, mid-, and short-term goals of the school in addition to issues around increasing academic achievement in nation-wide tests which is mostly identified in the SIP. Another aim was to identify key decisions that the principal was expected to make as they related to each of these goals. The administrators provided general information regarding initiatives currently running in the school. The teachers provided detailed information about the initiative they were leading. Finally, document analysis was also conducted in order to triangulate the perspectives of the principal, administrators and teachers. Documents included the SIP, American College Testing (ACT) exam results, as well as regular meeting notes, and other documented sources of goals for the school, teachers, and initiatives (e.g. plans, progress reports, and meeting notes).

Based on the information collected, six major goals were identified. Reaching these goals should be the foundation for the decision making process. However, analysis of the data collected also revealed that not all initiatives were directly linked to these goals, making it a challenge to establish whether they are having a positive impact. The success of current initiatives was to be based on the attainment of supporting objectives that are directly derived from the school's vision and goals. Therefore, through the process of mapping such relationships, the following major goals (in priority order according to the stakeholders), and relevant the initiatives were identified.

4.2.1. Goal 1 – increase academic achievement

For various reasons, including the then active *No Child Left Behind* initiative, and because the key goal expressed in the SIP was around increasing academic proficiency as illustrated by standardized State test, the school focused on tests mandated by the State. The following initiatives were identified as alternatives for improving student test performance:

a. Applying effective strategies specific to subject matters to increase test scores.
b. Initiating 10-week ACT Preparation Program: the program aims to integrate ACT preparation process into the current curriculum, such as, using specific testing terminology, using ACT sample quizzes, focusing on ACT test content, and so on. The program encourages test taking strategies tutorials as well. Under the program, students will be supported individually based on their scores and specific test problem areas. The school counselor will track the progress of each department. The program will apply home and timed testing practices.
c. Establishing vertical teaming: each subject matter has its own vertical teams to identify gaps in the curriculum, develop a common assessment across the school, develop a standard pyramid of intervention for individual students, and utilize pacing charts to foster standardization. Vertical teams discuss the best strategy to teach concepts, topic and content. They focus on sequencing of the content because some content are covered at 12th grade but ACT test is at 11th grade. They aim to decrease those kinds of problems in the curriculum.
d. Applying Drop Everything and Read (DEAR) which is also called Sustained Silent Reading: the program aims to increase students' reading habits and skills. Everyday students stopped whatever they are doing and read whatever they want. It is 15-minute activity. The literature demonstrates positive attitude and achievement increase because of the DEAR program.
e. Developing teacher evaluation by students: though there is currently no such program in the school, this potential program was emphasized by the school principal. As such, it was determined as a part of evaluation and continuous improvement framework.
f. Establishing professional learning community: this program is still in its infancy. The main expectations from employees are to increase their knowledge about professional learning community and implement it.

4.2.2. Goal 2 – utilize technology to support all activities in the school

This goal is part of a technology program unique to this school. The goal covers integration of technology in overall school activities to increase achievement. The following are key aims:

a. Continuous evaluation of the technology program: a formative evaluation of the program was previously conducted. The longer term plan is that it undergoes a summative evaluation.
b. Encouraging students' electronic portfolios.
c. Establish and operate a student-run technology help-desk.
d. Implementing Studywiz software with the staff: Studywiz Spark is a Dynamic LearnSpace for K-12 education that creates an enriched online learning environment for students. It is a tool for elevating instruction through educational content collection, organization and interactivity; collaboration and personalized learning; real-time feedback and assessment.
e. Utilize and become proficient in i-Life, Office, and server software program: this goal is relevant to skill improvement

and transfer. However, it was not explicitly mentioned in the school improvement plan.
f. Training of the staff in digital tools.

4.2.3. Goal 3 – create a caring school environment

This goal fosters the creation of a caring school environment. The following are the key aims:

a. Decreasing referrals: referrals are used for identifying discipline problems in the school, with a referral form being prepared by teacher and an administrator engaging in problem solving with the student.
b. Encouraging student assemblies: the student assembly is the place where students express their ideas about the school and regulations. It also fosters peer-mediation among students. Before every assembly, a questionnaire is delivered to ask the common issues across the students, with the most commonly cited put on display for the assembly.
c. Implementing school-wide activities: Fun-Fest, Super Saturdays, and Locked-in are some of the examples of these activities. Some workshops, raffles, and fun activities are also provided.
d. Character education: character education is an umbrella term generally used to describe the teaching of students in a manner that will help them develop as personal and social beings. Concepts that fall under this term include social and emotional learning, moral reasoning/cognitive development, life skills education, health education, violence prevention, critical thinking, ethical reasoning, and conflict resolution and mediation. Common goals in character education are to assist youth in developing into ethical, morally responsible, community-oriented, self-disciplined adults.

4.2.4. Goal 4 – improve the community around the school

The school also aims to increase local community's health. The followings are key aims:

a. Using the Business-Advisory Board to its full potential: the board supports the school with both information and financial resources through gifts, donations, internships, participants for events, and job-fairs. They also help the school keep the curriculum current.
b. Increasing parental involvement: improve current low levels of parental involvement through increased participation in school activities.

4.2.5. Goal 5 – increase graduation rates and grade point averages

While stakeholders acknowledged that tracking these indicators is important, they were placed as a lower priority due to the fact that the data does not indicate problems in these areas.

4.2.6. Goal 6 – increase post-graduation impact, such as going college and finding job

This goal focuses on career and employment tracking. The school would like to observe what their graduates are doing after graduation. Currently, there is no system in place to track graduates.

4.3. Step 3: deriving measurable indicators

Goals are not always directly observable and require the use of specific metrics to indicate their attainment. A performance indicator is an observable phenomenon which is associated with another phenomenon not directly observable (Guerra-López, 2007) and is also referred to as a performance metric (Lohman, Fortuin, & Wouters, 2004). The data that will be eventually collected relate to these specific measurable indicators, and thus, it is critical to select reliable and valid indicators that will accurately represent the status of the goal being measured.

Each goal was aligned with specific initiatives and measurable indicators. Content reviews of the various documents mentioned earlier, interviews and ongoing discussions with key stakeholders revealed six goals, 24 first level initiatives, 35 second level initiatives, 43 third level initiatives, 17 fourth level initiatives and 210 measurable indicators. Following a goal analysis approach (Dick, Carey, & Carey, 2005), each major goal can be divided into component initiatives, and in turn, each of those initiatives can be further subdivided into its own set of sub-initiatives, and so on. The measurable indicators are connected hierarchically to the goal by means of initiatives. For example, the *increase academic achievement* goal had three first level initiatives: (a) increase academic achievement in English Language Arts, (b) increase academic achievement in Science, and (c) increase academic achievement in Mathematics. The *English Language Arts* initiative was broken into ten different measurable indicators:

1. English Language Arts test scores,
2. scores of research papers written by students,
3. number of students tested by using the STAR reading program,
4. number of teachers using advanced organizers for teaching,
5. students' attendance to the Summer Enrichment Academy,
6. students' satisfactions about Summer Enrichment Academy program,
7. number of professional development activities implemented,
8. types of professional development activities implemented,
9. numbers of teachers completed 6 + 1 Writing Traits training,
10. number of implementation of 6 + 1 Writing Traits training.

As one can see from the list of indicators, they are all identified in measurable terms. The collective results of them would give an idea about how the school performs regarding the ELA sub-goal. It should be noted that desired targets should be established for each indicator as a basis for evaluation so that proper judgments can be made with regards to satisfactory improvement (Fig. 2).

ACT preparation (see Fig. 3), provides another illustration of this process. The first level initiative had twelve second level initiatives. The first one is *Initiating 11th Grade High-Achievers Plan* including third level initiative which is *Meeting with Students Individually*. This third level initiative was divided into three fourth level initiatives which are (a) motivational support, (b) expectancy report, and (c) one on one feedback on questions in 40–60% range errors. Both third and fourth level initiatives were identified by indicators. The *Meeting with Students* initiative was linked to number of students met, students' satisfaction from sessions, and students prospective scores indicators. *Motivational Support* initiative was associated with number of hours of motivational support and types of motivational support. *Expectancy Support* initiative was provided by number of hours spent for educational plans discussed indicator. The last fourth level initiatives were linked to three indicators: (a) total number of hours spent for one-on-one feedback with high achievers, (b) total number of questions reviewed, and (c) types of errors made commonly in the exam indicators.

The *create a caring school environment* goal had four first level initiatives. One of these initiatives was *decreasing number of referrals (discipline problems)*. This first level initiative had two second level initiatives: (a) types of attempted resolution and (b) types of administrative actions. Both the first and second level initiatives were connected to different specific indicators. The first level imitative was associated with number of referrals. These second level initiatives were linked to types of resolutions and types of administrative actions indicators respectively (see Fig. 4).

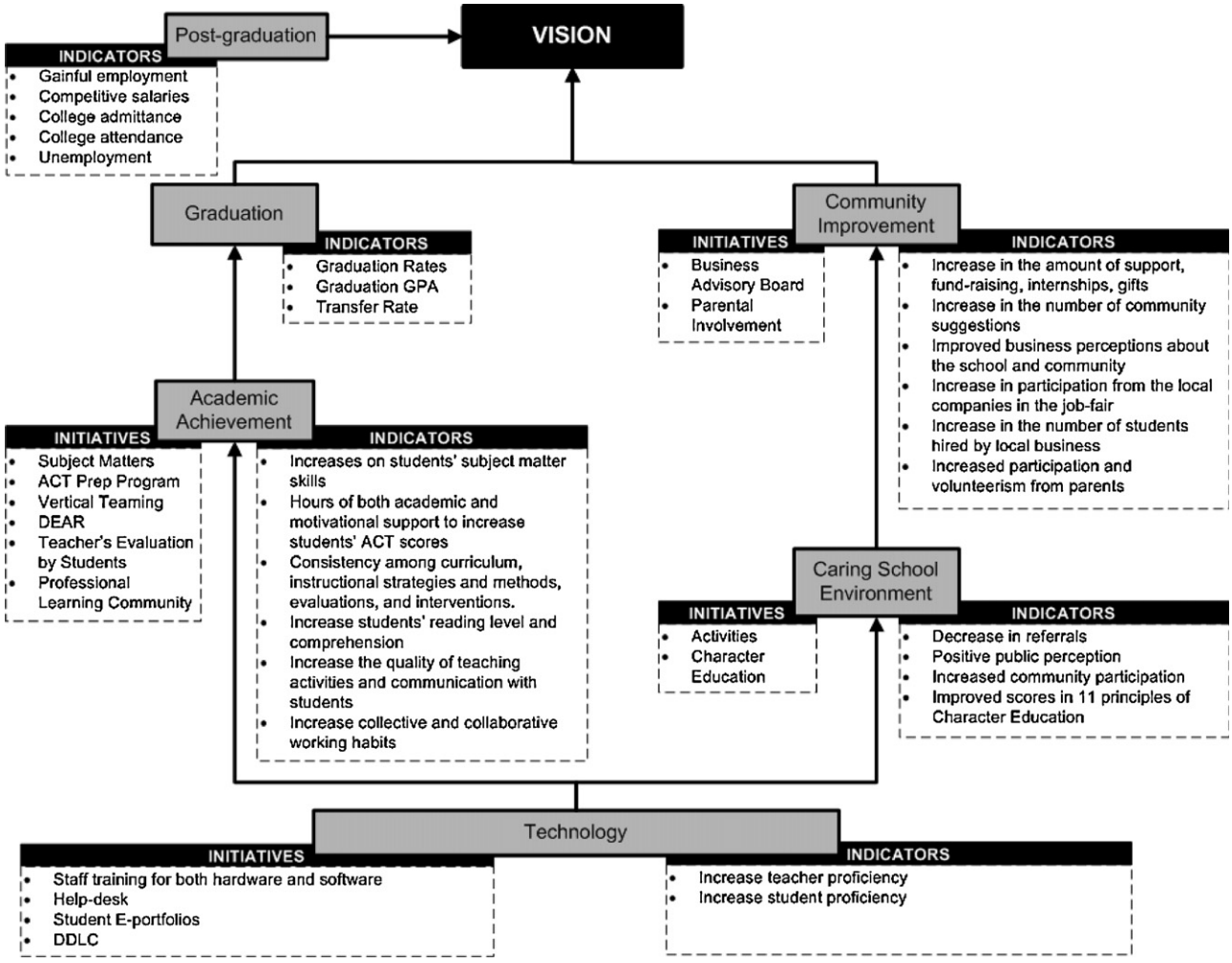

Fig. 2. The vision, major goals, and sub-goals of the urban school for the evaluation framework.

The performance measurement and evaluation framework was designed and developed on the basis of the hierarchical structure of vision, mission, goals, initiatives and related indicators. It should be noted, however, that though hierarchical in terms of how each contributes to the next, the measurement, evaluation and continual improvement framework should be dynamic. A dynamic evaluation system is continuously updated with indicators that are relevant not only to the long term goals we hope to accomplish, but also to the mid-term, and often changing short-term goals. Thus, the system must remain relevant and current in order to help make timely decisions (Guerra-López, 2007, 2010; Lohman et al., 2004). In latter stages of the process, the indicators were used as a baseline to identify data sources, data collection vehicles, and data analysis procedures.

It should be noted that the identification of performance indicators can also be linked to external school requirements such as reporting and accreditation. For example, this school is annually evaluated by AdvancED (2007), an organization established in partnership between the North Central Association Commission on Accreditation and School Improvement (NCA CASI), the Southern Association of Colleges and Schools Council on Accreditation and School Improvement (SACS CASI), and the National Study of School Evaluation (NSSE).

Table 4 illustrates a couple of examples of AdvancED standards and the relevant performance measurement and evaluation framework indicators, or data points, that would provide evidence of meeting these standards.

4.4. Step 4: identifying data sources

The data sources inform the evaluators where they can find data for the specific measurable indicators. It is important to first consider what data is required (i.e. what indicators will be measured) before looking at possible sources since the required data should drive the data collection process. While using readily accessible sources could expedite the evaluation process, those sources are not necessarily going to render relevant, reliable, valid, and complete data (Guerra-Lopez & Norris-Thomas, 2011). Efforts must be made to ensure that the data sources are first and foremost appropriate for the data sought, and secondly, given that criteria that we take advantage of, those that are ready available. In this case study the current prepared improvement plan, State level exam reports, as well as administrators and teachers were central sources.

4.5. Step 5: selecting data collection methods

There were two dimensions of this step. One dimension was related to data collection used by the authors in the context of the case study. Extant data review, semi-structured interviews, and non-participatory observations were utilized. However in this

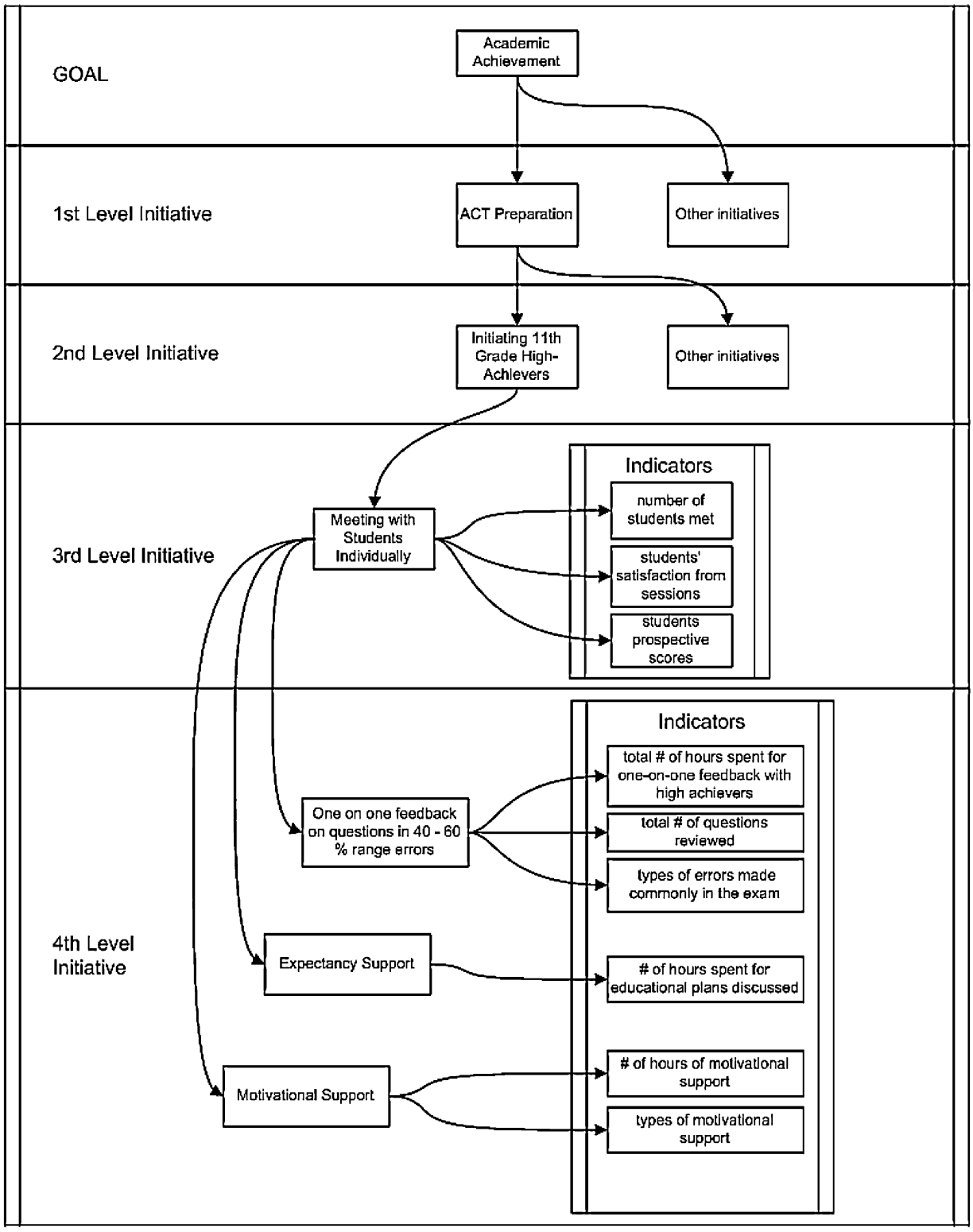

Fig. 3. The hierarchy of ACT achievement goal.

section, the focus will be on the process of selecting data collection methods for the actual performance measurement and evaluation framework.

To identify the appropriate vehicles, the measurable performance indicators and the relevant source was the primary consideration. For instance, the indicators for *decreasing number of referrals* were all directly observable, independently verifiable and could be easily tracked from documented evidence (see Fig. 4). Thus, extant data review is an appropriate data collection approach. On the other hand, *parents' perceptions about involvement* is not directly observable nor independently verifiable, and thus require some measurement tool for collecting the data.

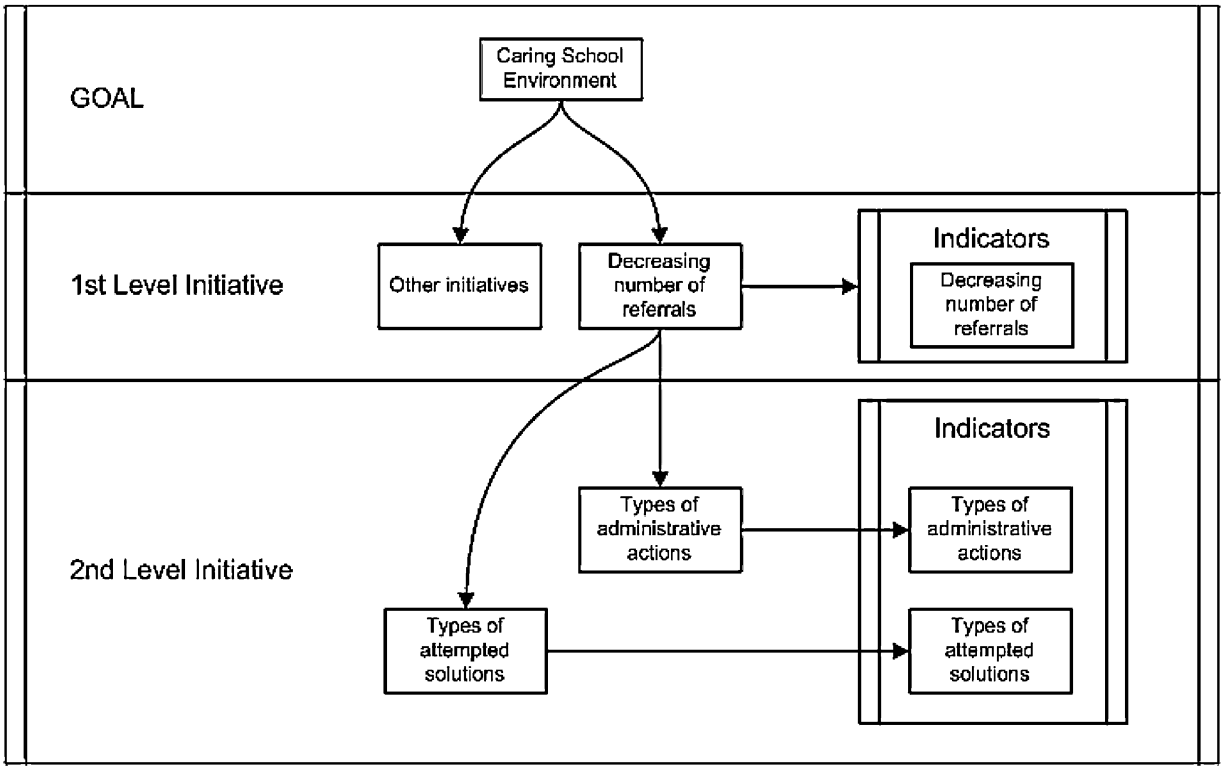

Fig. 4. Illustration of a hierarchy of the caring school environment goal and initiative.

Questionnaires, focus group protocols, or interview protocols might be appropriate choices, and depending on other considerations (e.g. number of participants and available resources and expertise), one, or a combination of them would be selected. In this case, a survey process was selected, with a Likert scale questionnaire. The second data collection method for this indicator was an interview with the leader of the parent engagement committee. These interviews were beneficial for obtaining not only deeper information, but also necessary documents and numbers regarding to the parent activities.

As another illustration, a different method was devised for the first level initiative *character education*, under the *caring school environment* goal. During an interview, the school principal provided the authors with some previously used instruments with established reliability and validly, which were the dissertation topic of a doctoral student who was part of the school staff. Careful analysis and consideration focused on what the instrument was meant to measure, and the specific items, revealed this was an appropriate data collection vehicle. Moreover, further research led to the identification of a self-assessment tool developed by an organization which disseminates character education. It is important to highlight the potential utility of scanning for already available data collection instruments. These are often available at no cost, especially for educational institutions.

Table 3
Responsibilities of key school stakeholders.

Stakeholder	Responsibilities
The school principal	• Main decision maker, and as such, each initiative must have her approval
The assistant school principal	• Information technology processes, policies and infrastructure, and concentrated on the IT implications of the evaluation framework, e.g.: ◦ Utilizing Scantron Survey and Assessment technology, maintaining COGNOS system which contains information about Michigan Educational Assessment Program (MEAP) and other state mandated tests, ◦ Handling the school district supported website providing information about MEAP test results, ◦ Maintaining a student demographic information system storing behavior records, transcripts, grades, attendance, and other information, and ◦ Accessing vendors' web sites providing information regarding exams and educational materials
The initiative coordinator	• Execution of initiatives • Monitoring and evaluating each initiative group • Observing the overall effect of initiatives on the school's performance
The teacher leaders	• Tracking their initiative's progress • Reporting their progress to the initiative coordinator • Communicating every development to both the initiative coordinator and the members of initiative groups
The initiative member teachers	• Carrying the tasks assigned by their leader teachers
Parents	• Engaged with their children's learning • Engaged with school activities and resources
Students	• Direct beneficiary of instructional and non instructional initiatives within the school • Direct beneficiary of most school efforts and resources

Table 4
An example match between AdvancED standards and the evaluation framework goals and indicators.

AdvancED Standards	Potential evidence for this standard from the Evaluation & Improvement Framework
• Stakeholder communication and relationships ◦ Fosters collaboration with community stakeholders to support student learning ◦ Has formal channels to listen to and communicate with stakeholders ◦ Solicits the knowledge and skills of stakeholders to enhance the work of the school ◦ Communicates the expectations for student learning and goals for improvement to all stakeholders	• Community Improvement ◦ Business Advisory Board ◦ Parental involvement
◦ Provides information about students, their performance, and school effectiveness that is meaningful and useful to stakeholders	• Academic achievement ◦ ACT Preparation Program • Community improvement ◦ Business Advisory Board ◦ Parental Involvement

Table 5
The template for organizational levels, goals, indicators, data sources, vehicles, and analysis.

Organizational level	Goals	Indicators	Data sources	Data collection vehicles	Data analysis procedures
Community School Team					

4.6. Step 6: selecting data analysis tools

As in the previous step, data analysis techniques were considered in the context of the type of data to be analyzed. It is not critical that all your stakeholders be statistical experts, in fact, this particular step can be (and sometimes is) carried out with external help of someone who is an expert (in this case, one of the teachers played a significant role during this step). What is most critical is that your stakeholders understand the data that has been collected, analyzed, represented, and reported. The most frequent analysis approach found to be appropriate and relevant to the indicators was frequencies, totals, and percentages (see Table 5 for integrated examples). Since understanding gaps and trends was critical to the school administration, comparisons and trend analyses were critical across various academic years. They were also very interested in establishing the actual results of school initiatives. Comparisons of pre and post interventions were also important, particularly in the context of trend lines so as to increase confidence that the observed change, if any, could be linked to interventions. Measures of central tendency, variability, and relative ranking analyses were also suggested by the evaluation team. For example, the average ACT test score for the school, the average score of the most successful students in the school, and the distribution of test scores to judge the proficiency criteria.

While it was not used in this specific case, it is also worth considering the use of regression analysis to estimate the impact of various initiatives on specific outcomes. The stakeholders felt it was important to use simple, or very commonly used, analysis techniques that all users felt comfortable as a way to increase actual usage of the system.

Additionally, control groups can be quite useful in isolating the effects of specific initiatives. While sometimes a quasi-experimental design is naturally occurring (e.g. pilot programs in specific classrooms or schools), other times control groups are not feasible, or desirable. In such cases, a time-series analysis can be an appropriate alternative for observing the impact of a given intervention.

Table 5 provides a template that was used to link goals, subgoals, indicators, data sources, data collection vehicles, and data analysis procedures.

Every goal and initiative was classified based on its organizational level. There are three levels: community, school, and team. The community level entails the goals related to community improvement around the school. The school level covers the goals which are related to the outputs of the school and initiatives helping the school to reach its goals. The team level contains the activities in the school. The plan has goals for community and school levels. These goals are linked to indicators by the means of initiatives. Each indicator was represented with one or more data sources. Table 6 includes one example from each level.

4.7. Step 7: communication of results and recommendations

While beyond the scope of this case study, the framework was designed with the intent of it being fully developed and implemented as an interactive web-based system, where decision-makers can access the data that is most relevant to their decisions and responsibilities, on an almost immediate basis. In the tradition of informatics used in other fields (e.g. bioinformatics, medical informatics, and health informatics), educational informatics is an emerging research area that combines the application of information computing and technology and information management techniques (Kling & Hara, 2002) to the field of education. The design of this performance measurement and evaluation framework reflects a preliminary step in the integration of educational informatics and performance improvement theories and concepts into a practical tool.

The appropriate utilization of this system was strongly recommended to support sound decisions, as ultimately, the value of this design lies in its utility and enhancement of decision-making. Thus, the communication of the performance measurement and evaluation results was meant to be ongoing so that it could facilitate the timely formulation of recommendations for action.

Table 6
Examples of goals, initiatives, indicators, data sources, collection vehicles, and analysis procedures.

Level	Goal	Initiatives	Indicators	Data sources	Data collection vehicles	Data analysis procedures
Community	Improve the community around the school	COM.2Parental involvement COM.2.1Services provided for parent COM.2.2Sponsor events	Number of the parents involved in activities (COM.2) Number of services provided to parents (COM.2.1) Parent satisfaction with school activities Number of visits by parents (COM.2.2) Parents' perception about involvement (COM.2)	Parents Parents' committee Chair	Parent survey Interview with committee Chair Extant data review (e.g. attendance and participation records)	Total frequency will be counted in every evaluation period; frequencies should be increased to show evidence for an improvement.
School	Create a caring school environment	CSE.1Decreasing number of referrals (discipline problems) CSE.1.1Types of attempted resolution CSE.1.2Types of administrative actions	Number of referrals (CSE.1) Types of resolutions implemented Success of implemented resolutions (CSE.1.1) Types of administrative actions (CSE.1.2)	Archived referrals forms	Extant document analysis Referral forms	CSE.1 indicator should decrease Types of resolutions and administrative actions must be evaluated whether they are effective solutions
Team	Increase academic achievement	VER.1Identification of gaps in the curriculum VER.1.1Sharing teaching strategies VER.1.2Sequencing	Number of shared teaching strategies (VER.1.1.a) Number of applied shared-teaching-strategies (VER.1.1.b) Number of changes made in content sequence (VER.1.2.a) Types of changes made in content sequence (VER.1.2.b)	Vertical teaming meeting notes (VER.1.1.a) (VER.1.1.b) Teachers (VER.1.1.a) (VER.1.1.b) Pacing charts (VER.1.2.a) (VER.1.2.b)	Extant document analysis • Meeting logs • Pacing charts Interview with teachers	Total frequency will be counted in every evaluation period; frequencies should be increased to show evidence for improvement Diversity of changes in the curriculum can be analyzed. It provides an idea about problems of the current curriculum (VER.1.2.a) (VER.1.2.b)

Note. COM.2 indicates the first level initiative of community improvement major goal; CSE.1 indicates the first level initiative of caring school environment major goal; VER.1 indicates the second level initiative of vertical teaming which is the first level initiative of academic achievement major goal.

5. Discussions and lessons learned

The primary purpose of this case study was to illustrate the use of the IEP to design a performance measurement and evaluation framework that would facilitate accessing performance data on an immediate and ongoing basis. The key value of immediate and ongoing access to relevant data is the enhancement of sound decisions and actions that result in measurable improved performance.

Immediate and ongoing access represents an additional investment in an information technology system, even a basic one. Unfortunately, the funding for such a system was not immediately available so that the design could be developed and into a prototype for subsequent evaluation and improvement. At the very least, technology requirements should be considered alongside the design, including integration of old and new systems, costs, maintenance, etc. Moreover, the value (i.e. what worthwhile accomplishments it will deliver) of the system should be communicated to stakeholders that were not only part of the central work group, as in this project, but also to potential funding sources or sponsors. This was a significant challenge in this case, as there was much attention and participation in the design, but not enough for securing funds required for the full development, implementation, and evaluation of the performance measurement and evaluation framework.

Other important considerations include the impact of such a system on the overall performance management system. That is, how will integrating this system into performer's repertoire (Gilbert, 1978), impact their performance? Specifically, how does it impact job expectations, consequences, processes, and other key performance factors? In this case, articulations of how the use of this framework would be reconciled with current responsibilities of target users (e.g. principal, administrators, and teachers) was not sufficiently expressed and documented. Without clear expectations and consequences for users, the framework may not be used to its full potential, assuming it would eventually be fully implemented.

Moreover, careful consideration of proper roll out and implementation of such a system are paramount. To this end, a communication plan to all involved must be derived and executed so that everyone is clear about new expectations as they relate to the use of the system, the benefits to each performer expected to use the system, any supporting information such as job aids or training required to use the information. Due to funding constraints, this communication and implementation plan was not elaborated. However, stakeholders were advised to develop such a plan.

Using a front-end model, such as Kaufman's strategic alignment Organizational Elements Model (1981, 2006) from an evaluation perspective is not without its complications. In essence, the strategic alignment should be happening in the front-end, that is, during need assessment and planning, and later an evaluation of the recommended and implemented initiatives would confirm the success of such initiatives in impacting strategic goals as desired. The authors were working from the backend, that is, with initiatives that had already been selected, with or without need assessments or strategic alignment, and attempting to integrate such a perspective into an evaluation and measurement framework. This called for an extra level of diplomacy, analysis, and buy-in, as some stakeholders had been the main proponents of initiatives, some of which were not necessarily clearly linked to the school's overall strategic goal, or even operational goals. The authors took great care to stress the current opportunity for strategic alignment during this design process, rather than focusing on the missed opportunity of conducting 'proper' need assessment and strategic planning beforehand. This helped maintain buy-in and engagement, rather than blame and isolation of stakeholders.

Finally, and not least importantly, evaluation of the system design, development, implementation, and impact should be conducted to ensure that it is indeed delivering on its intended purpose. Stakeholders should use evaluation data to continually improve and update the system, with the understanding that not only will specific results and performance indicators change over time, but also will the initiatives used to impact them, and even the basic technology requirements of maintaining such a system.

References

AdvancED. (2007). *Accreditation standards for quality schools: For schools seeking NCA CASI or SACS CASI accreditation* Retrieved from http://www.advanc-ed.org/accreditation/standards/advanced_school_standards.pdf..

Anderson, C., & Kilduff, G. (2009). Why do dominant personalities attain influence in face-to-face groups? The competence-signaling effects of trait dominance. *Journal of Personality and Social Psychology, 96*, 491–503.

Aranda, C., & Arellano, J. (2010). Consensus and link structure in strategic performance measurement systems: A field study. *Journal of Management Accounting Research, 22*(x), 271–299.

Bertalanffy, vo n L. (1968). *General systems theory*. New York: Braziller.

Campbell, K., Goodie, A., & Foster, J. (2004). Narcissism, confidence, and risk attitude. *Journal of Behavioral Decision Making, 17*, 1–15.

Caroll, A. (2000). Conceptual and consulting aspects of stakeholder theory, thinking, and management. In R. T. Golembiewski (Ed.), *Handbook of organizational consulting* (2nd ed., pp. 169–181). New York: Marcel Dekker.

Dick, W., Carey, L., & Carey, J. O. (2005). *The systematic design of instruction* (6th ed.). Boston, MA: Pearson Allyn and Bacon.

Dyehouse, M., Bennett, D., Harbor, J., Childress, A., & Dark, M. (2009). A comparison of linear and systems thinking approaches for program evaluation illustrated using the Indiana Interdisciplinary GK-12. *Evaluation and Program Planning, 32*(3), 187–196.

Gilbert, T. F. (1978). *Human competence: Engineering worthy performance*. New York: McGraw-Hill Book Company.

Guerra, I. (2005). How to develop useful questionnaires. In M. Silberman & P. Phillips (Eds.), *The 2005 training and performance sourcebook* (pp. 233–238). Princeton: Active Training.

Guerra-López, I. (2007). *Evaluating impact: Evaluation and continual improvement for performance improvement practitioners*. Amherst, MA: HRD Press Inc.

Guerra-López. (2010). Performance measurement and magement systems. In R. Watkins & D. Leigh (Eds.), *Handbook of improving performance in the workplace volume 2: Selexting and implementing performance interventions* (pp. 251–274). San Francisco, CA: Pfeiffer.

Guerra-Lopez, I., & Norris-Thomas, M. (2011). Making sound decisions: A framework for judging the worth of your data. *Performance Improvement Journal, 50*(5.), 30–38.

Kaufman, R. (1981). Determining and diagnosing organizational needs. *Group & Organization Management, 6*(3), 312–322.

Kaufman, R. (2006). *Change, choices and consequences: A guide to Mega thinking and planning*. Amherst, MA: HRD Press.

Kaufman, T. (2011). *Performance management and school reform: A multi-case study of middle and high school performance management for instructional improvement*. Ed.D. Dissertation. Harvard University, MA, United States.

Kaufman, R., Guerra, I., & Platt, W. (2006). *Practical evaluation for educators: Finding out what works and what doesn't*. Thousand Oaks: Corwin Press.

Kling, R., & Hara, N. (2002). *Informatics and distributed learning*, as cited in Levy, P., Ford, N., Foster, J., Madden, A., Miller, D., Baptista, M., McPherson, M., & Webber, S. (2003). Educational informatics: An emerging research agenda. *Journal of Information Science 29*, 298.

Ladd, H. F., & Walsh, R. P. (2002). Implementing value-added measures of school effectiveness: Getting the incentive right. *Economics of Education Review, 21*(x), 1–17.

Lohman, C., Fortuin, L., & Wouters, M. (2004). Designing a performance measurement system: A case study. *European Journal of Operational Research, 156*(2), 267–286.

Radin, B. (2006). *A challenging the performance movement: Accountability, complexity and democratic values*. Washington, DC: Georgetown University Press.

Richey, R., & Klein, J. D. (2007). *Design and development research*. Mahwah, NJ: Lawrence Erlbaum Associates.

Scriven, M. (1967). The methodology of evaluation. In Tyler, R. W., Gagné, R. M., & Scriven, M. (Eds.), *Perspectives of curriculum evaluation* (Vol. 1, pp. 39–83). Chicago, IL: Rand McNally.

See, K. (2009). Reactions to decisions with uncertain consequences: Reliance on perceived fairness versus predicted outcomes depends on knowledge. *Journal of Personality and Social Psychology, 96*, 104–118.

Tessmer, M., & Richey, R. (1997). The role of context in learning and instructional design. *Educational Technology Research and Development, 45*(2), 85–115 doi:10.1007/BF02299526.

U.S. Department of Education. (September 2010). *Race to top fun* Retrieved from http://www2.ed.gov/programs/racetothetop/index.html.

Williams, B. (2011). *Organizational health and mindfulness as predictors of school effectiveness: Using the Balanced Scorecard*. Ed.D. Dissertation. The University of Alabama, AL, United States.

Ingrid Guerra-López is associate professor and director of the Institute for Learning and Performance Improvement at Wayne State University. Dr. Guerra-Lopez's work focuses on improving management decision-making with the effective use of performance measurement, evaluation, and assessment. She has written five books on performance evaluation and assessment, as well as published over thirty articles and over a dozen book chapters on performance improvement, evaluation, assessment, and performance measurement and management systems. She has consulted for public and private organizations nationally and internationally and provided extensive leadership coaching to leaders in Latin America, Europe and Asia.

Sacip Toker is a graduate research assistant and Ph.D. candidate at Instructional Technology Department, Wayne State University. He also works as a graduate research assistant at the same department. His research interests are expertise in performance improvement, collaborative online learning for problem solving and critical thinking, evaluation frameworks for K-12 schools, strategic information technology for organizations. He has co-authored three articles and four book chapters.