2-14-2011

A Career Preparation System Accountability System

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December 5, 2002

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1. Introduction

In 1994, the federal government passed the School-to-Work Opportunities Act (STWOA), which funded states to plan and implement career development activities for all students. Federal involvement in school-to-work has ended, however, because of a legislated sunset provision. The State of Michigan funded and implemented the most extensive, ambitious continuation of the School-to-Career ***principles*** that were embedded in the STWOA of any state in the union.[1] In 1997, Michigan began to operate the Career Preparation System (CPS). The administrative agency for the CPS, the Michigan Department of Career Development (MDCD), has endeavored to build and implement a "system-change" initiative within a massive "change-resistant" system of elementary, secondary, and postsecondary education. In a few short years, the Career Preparation System has gotten off the ground and has garnered substantial participation across the state throughout the educational system. It has matured to the point where the "system" needs to develop effective accountability and monitoring capabilities, so that feedback mechanisms can adjust the process and achieve continuous improvement.

In a nutshell, the problem that MDCD faces is to monitor how well local education agencies are doing in contributing to the success of the mission of the Career Preparation System. This assessment involves determining the outcomes arising from the activities that are being offered to students and staff members and attempting to attribute those outcomes to the Career Preparation System.

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[1]Note that the Career Preparation System differs from school-to-work in a number of fundamental ways. It does, however, extend the notion of career development for ***all*** students.

The MDCD contracted with the Upjohn Institute to provide assistance in the design and implementation of an accountability system for the CPS. The contract comprised five essential tasks for staff from the Upjohn Institute to undertake:

1. Review the CPS program logic model
2. Assist the MDCD accountability team to revise the program logic model to articulate measurable outcomes
3. Provide consultation on measurement issues
4. Develop a statistical analysis plan
5. Analyze pilot or dummy data using proposed methods

As envisioned in the Request for Proposals, the essential tasks would progress sequentially and, under that scenario, would result in five separate deliverable items. However, the development of the accountability system proceeded in a nonlinear manner with much interaction between the MDCD accountability team, Upjohn Institute staff, and individuals from the field. Consequently, with permission from MDCD, staff from the Upjohn Institute decided to integrate all of the contract deliverables into this single report.

The next section of the report reviews the Career Preparation System and the program logic model that had been developed prior to Upjohn Institute staff involvement. Section three presents the accountability system that was developed as the program logic model was reviewed and revised by the accountability team and individuals from the field. The fourth section briefly documents the extent to which staff from the Upjohn Institute participated in meetings with the accountability team and stakeholders from across the State. Section five presents an analysis plan for monitoring system performance and accountability and uses fictitious data to exemplify some of the proposed analyses. Section six briefly summarizes. Appended to the report are various data forms, instructions, and system documents that have been developed.

2. Development and Review of the Career Preparation System Program Logic Model

The Career Preparation System is a state-administered and funded program that is intended to achieve three goals:

1. To ensure that career preparation is fully integrated into the Michigan education system

2. To ensure that all students, with their parents, will be prepared to make informed choices about their careers

3. To ensure that all students have the types and levels of skills, knowledge, and performance valued and required in their education and career choices

The MDCD attempts to achieve these goals by providing funds to local educational agencies (school districts) to implement activities that may be offered to all students at all grade levels in one or more of the following components:

- Career Pathways
- Education Development Plans
- Career awareness and exploration
- Authentic instruction
- Career assessment
- Career employability skills
- Comprehensive guidance and counseling
- Technology education
- Work-based learning

Many of these components overlap making it sometimes difficult to identify to which component an activity in which students are engaged belongs. The MDCD believes that a fully implemented system aimed at achieving its three goals will ultimately encompass all nine components.

In the first few years of implementation, however, given limited resources and given that districts needed to traverse a learning curve for each component, the MDCD allowed regions to

select their own priorities. Actually, the Department specifiedState priorities: to implement Career Pathways and Education Development Plans. Then regions could select one or two other components as priorities if they so chose.

The original legislation establishing the CPS indicated that the State needed to establish an accountability system to ensure that public funds were being invested prudently[2]. A recent audit of the CPS criticized the Department for not having established a comprehensive accountability system.[3]

Several fundamental issues confound the problem of assigning accountability to individual school districts for the outcomes emanating from their participation in Career Preparation System components such as the following:

- Local districts choose the components and activities in which they participate
- Program outcomes that result from their choices are influenced by a myriad of factors over and above the direct program activities offered; for example, outcomes depend on covariates such as student characteristics, building and district-level characteristics, employer interest and involvement, and the local economy
- Program outcomes may vary over time as districts traverse their learning curves, and make decisions about resources and activities. The same level of program offerings and resources in one year may have quite different outcomes from what will occur given those same levels of resources two years later
- Program outcomes may be very difficult to measure, and so indicators of success will need to be developed

When staff from the Upjohn Institute began work on this contract, the MDCD accountability group had developed a flowchart model of the career development process and a descriptive logic

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[2]Subsection (4) of Section 388.1668 of P.A. 94 of 1979, as amended in 1997.

[3]Michigan Office of the Auditor General, May 2002, "Performance Audit of the School-to-Work and Career Preparation System," pages 31 - 35.

model of the Career Preparation System[4]. These models disaggregated the educational system into 4 levels: Elementary grades K-5 (I); Middle school grades 6-8 (II); High school grades 9-12 (III); and post-high school education or training (IV).

For each of the three K-12 levels, the logic model identified "Outputs;" "Intermediate Outcomes;" "Outcomes;" "Indicators;" and "Measures." The "outputs" were the activities that were undertaken to deliver instruction or information to students within a component. For example, an output at level I (or II) for work-based learning was to have guest speakers from different career backgrounds discuss their careers. An output at level III for Education Development Plans was to have every student annually review and update their EDP. The "intermediate outcomes" were the responses to the stimuli of the outputs. They represented the students' engagement with the outputs. The intermediate outcomes for the guest speakers would be that all elementary and middle school students have an opportunity to listen to and learn from outside guest speakers. The intermediate outcomes for high school students updating their EDPs would be that annually when signing up for courses, all students review and update their EDP, and take it home for parent endorsement.

"Outcomes" are the desired skills, knowledge, or behaviors that the system is attempting to impart. They are closely related to the overall goals of the system. Outcomes include behaviors such as making career choices based on career assessment results or that are reflective of information learned in a work-based learning situation. Outcomes may also include knowledge such as understanding the educational requirements and skills needed to pursue an occupation. The accountability of a system really depends on the extent to which system interventions result in positive outcomes.

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[4]Unpublished documents dated April 2002.

"Indicators" are events or behaviors that are thought to be correlated with outcomes. That is, outcomes may not be directly observable or measurable, or outcomes may occur in the future beyond the time frame of interest. Therefore, indicators may be useful. One of the outcomes of the EDP process is that parents/families are familiar with student career goal education and training plans. An indicator of this outcome is a parent endorsed EDP. One of the outcomes of career pathways is that students know and take the course work that prepares them for their career goals. An indicator is the number of remedial/developmental courses that a student takes in a postsecondary setting.

Finally, "measures" are constructs that gauge the extent to which indicators or outcomes have been achieved. Measures may quantify a performance level at a point in time, or they may pertain to changes over time. Generally measures of performance can be compared to standards to provide a normative conclusion as to whether adequate progress has been made. Note again that standards can be set for levels or changes over time.

This logic model is fairly general and can be applied to a wide set of products or services. For example, an automobile company may have the goal of producing high quality cars that satisfy customers. Its output consists of the production of certain makes of automobiles that have certain sets of characteristics. The intermediate outcomes might be having consumers pay attention to advertising or other consumer information about the automobiles. Another intermediate outcome might be having consumers test drive the vehicles. The outcomes for which the company is accountable are vehicle quality and customer satisfaction. Indicators of these outcomes might be maintenance records and market share. Measures would be "the percentage of cars that undergo non-

routine maintenance in the first year of ownership" and "the percentage of new car sales that are of this particular make."

Extensions and refinements. Staff from the Upjohn Institute participated in meetings of the MDCD accountability team to critique, extend, and refine the logic model. Some of this effort involved "tweaking" the outputs, intermediate outcomes, and outcomes to better reflect the goals and purposes of the CPS. Some of the effort involved extending the logic model.

One extension to the model was at the "front end." The outputs were tied to fundable activities under the CPS and to planning/implementation benchmarks for the components. When this was accomplished, the logic model showed the flow from specific activities that were undertaken in classrooms and school buildings to outcomes and measures.

Another extension was to provide a rationale or "theory" to explain how the outputs were related to the intermediate outcomes and outcomes. Finally, to tie the logic model to an evaluation model in the literature, the outcomes were classified according to the four levels of the Kirkpatrick model[5] – Reaction, Learning, Behavior, and Results. With these extensions, the team dropped "Intermediate Outcomes" from the logic model since they were subsumed under rationale.

In mid-June 2002, the MDCD accountability team had developed a sophisticated program logic model that provided the linkages between activities that were being offered by local districts and student (and parent) outcomes. The outcomes were classified by level (I - IV) and were classified by the Kirkpatrick framework. The strategy that the team pursued was to present the logic model to representatives from the field (referent group) to get feedback on viability. The plan

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[5]Donald L. Kirkpatrick, *Evaluating Training Programs: The Four Levels*, San Francisco: Berrett-Koehler Publishers, 1994.

involved three meetings: the first meeting would focus on the outcomes; subsequent meetings would focus on the measures and standards.

Unexpected, but valuable, input was gathered from the initial meeting of the referent group. Results of a meeting held on June 27, 2002, may be summarized as follows:

- Classifying outcomes by levels is not appropriate because local districts should have the flexibility to design and implement activities that fit within their existing curricula; in other words, don't hold local districts accountable for outcomes by grade levels
- The Kirkpatrick classification of outcomes doesn't add value
- Local districts have extremely scant and tight budgets, so any data collection must be minimal; use existing evidence such as EDP's and annual benchmarks that are reported
- Hold districts accountable for processes – are they doing the activities that they planned?

The accountability team took this advice to heart and revised the program logic model in many ways. It aggregated outcomes across the levels and significantly reduced the number of outcomes per component. It jettisoned the Kirkpatrick classifications of outcomes. It allowed for districts to be accountable partially for processes, but the team resisted giving up on outcomes all together. Staff from the Upjohn Institute constructed student vignettes to illustrate the point that the CPS may have effects on student outcomes. Furthermore, staff tried several regression models to see if existing data from the Michigan Department of Education and Standard and Poor's could be analyzed in a meaningful way.

The team also turned its focus to indicators and measures because these parts of the logic model had been less emphasized up this point in time, and the team realized that measures had to developed soon since the accountability system was to be implemented during the 2002/2003 school

year. Based on comments from the referent group, the design of the accountability system began to rely on five sources of data: a review of student EDP's; a 12th grade exit survey; a follow-up survey of graduates; annual CPS reports that indicated progress toward planning benchmarks; and other local district data that may be generated for Michigan's Education YES effort.

A second meeting of the referent group was held on August 6, 2002. The purpose of this meeting was to focus on the measures and begin to set performance standards for the various measures. The main upshot of this meeting was the infeasibility of a general follow-up survey of graduates. Furthermore, the group continued to press for more emphasis on process and less on outcomes. Members of the group also expressed serious concern about having to provide data about program components that were not priorities in their regions.

The accountability team revised the program logic model to remove measures from a general follow-up survey, and refined the accountability system to begin to look like its final form as described in the next section of this report. In lieu of a third meeting of the referent group, the accountability team put together a group of evaluation and educational measurement experts from across the state and scheduled a meeting of that group on September 12, 2002. That group made many suggestions to help refine the measures and system that had evolved by that time. However, the group seemed to reach consensus that the two new data collection efforts being proposed – a review of 10th grade EDP's and a short (exit) survey of 12th grade students – were feasible and minimally burdensome. Furthermore, one of the attendees suggested that the CPS accountability system could be used for NCA Transitions Accreditation purposes.

The system was revised in response to the Measurement Team's comments, and pilot tests were held of the 10th grade EDP review process and the 12th grade survey. A final meeting of the

referent group (together with members of the Measurement group) was held on October 24, 2002. The group had much discussion about the system described in the next section of the report, but the group generally endorsed it.

3. Design of the Career Preparation System Accountability System (CPSAS)

The accountability system that emerged from the initial logic model and interaction with individuals from the field is intended to help MDCD analyze the impact of the components of the Career Preparation System on students across the state. It will also help Education Advisory Groups (EAGs) and local districts assess their performance relative to standards in the areas of Career Pathways, Educational Development Plans, and additional components, if any, chosen by the EAGs.

The principles that were followed in developing the performance monitoring system were as follows:

- Minimize data collection burden on local districts
- Rely on current "planning benchmarks" and reporting as much as possible
- If possible, tie performance monitoring system to Michigan's Education YES and NCA transitions accreditation systems
- Keep system flexible so that it may be continuously improved over time
- Because of relatively early stage of implementation, use both process and outcome measures

The system schedule is as follows:

January MDCD supplies Career Preparation Coordinators with Instructions and 10th Grade EDP Assessment forms and 12th Grade Career and Educational Plan Report forms

Feb – April Local districts complete the 10th Grade EDP Assessment and the 12th Grade Career and Educational Plan Reports

April MDCD provides EAGs with customized End of Year Report forms

May 1, 2003 EAGs submit data from 10th Grade EDP Assessment forms, 12th Grade Career and Educational Plan Reports, and End of Year Report to MDCD

Summer MDCD analyzes data and calculates performance outcomes

September MDCD provides EAGS with performance reports on their priority components

The accountability system calculates a "score" for each local district for each component. (Local districts will only be held accountable for the state and regional priority components.) The scoring is done with a fairly straightforward algorithm that gives a district "full," "partial," or "no" credit depending on how its accountability measures relate to set performance standards. The scoring algorithm relies on different types of scale factors that are calculated as follows:

Performance standard scale factor	=	1.0, if measured outcome meets or exceeds performance standard
	=	measured outcome percentage/100, if measured outcome is less than performance standard
Response scale factor	=	1.0, if response percentage meets or exceeds the required response rate for validity
	=	response percentage/100, if required response rate is not met
Knowledgeability scale factor	=	1.0, if the percentage of students who don't know about the component or report that the component is not applicable is less than or equal to the required standard (25%)
	=	0.0, if the percentage of students who don't know about the component is greater than the required standard

A district will be rated as **Accountable** for a component if its performance score is greater than or equal to the accountability cutoff, which is set at 85 for 2002/2003. It is anticipated that the accountability cutoff will increase by 2 percentage points per year, up to a maximum of 95. In 2002/2003, a district will be rated as **Progressing toward Accountability** for a component if its performance score is less than the accountability cutoff. In future years, a district will be rated as **Progressing toward Accountability** for a component if its performance score is less than the accountability cutoff for that year, but the district's score has increased by 2 percentage points compared to the previous year. In future years, a district will be rated as **Not Accountable** for a component if it is not Accountable or Progressing toward Accountability.

Table 1 presents a tabular synopsis of the system. Several parts of the system refer to data collected at the local district level from a review of 10th grade students' education development plans (EDPs) and from a individual student report completed by 12th grade students. These two documents are appended to this report.

Table 1

The Career Preparation System Accountability System

Outcomes, Measures, Performance Standards, and Performance Scoring for Career Pathways (CP)

Outcomes	MDCD Goal(s)	Measures	Performance Standards	Performance Scoring	Score
CPs integrated into local district educational system	1	End-of-Year Report Benchmark 1 (Board Approval)	Level of 4	10, if district is reported at 4+ in end-of-year report; 5, if district is reported at 3 0, otherwise	
Buildings use CPs in curriculum	1	End-of-Year Report Benchmark 2	Level of 4	15, if district is reported at 4+ ; 10, if district is reported at 3; 5, if district is reported at 1,2; 0, otherwise	
High schools aligning courses to reflect career preparation	3	End-of-Year Report Benchmark 4c	Level of 4	15, if district is reported at 4+ ; 10, if district is reported at 3; 5, if district is reported at 1,2; 0, otherwise	
High school students have chosen a pathway	2	10th grade EDP assessment **Pct.** = **(Q3b/ Q2)*** 100 **Response** = **(Q2/Q1)** * 100	**Pct.** >= 85% **Response** >= 90%	20 * perf. std. scale factor * response scale factor	

CPs used to select courses	3	12th grade student self-report **(Q7)** **Pct.** = %age. of non-zero responses that are 1,2 **NA** = % of responses = 0 **Response** = %age of 12th graders who complete self-report	**NA** < 25% **Pct** >= 80% **Response** >= 80%	20 * perf. std. scale factor * response scale factor * knowledgeability scale factor	
CPs used to influence career choice	2	12th grade student self-report **(Q8)** **Pct.** = %age. of non-zero responses that are 1,2 **NA** = % of responses = 0 **Response** = %age of 12th graders who complete self-report	**NA** < 25% **Pct** >= 60% **Response** >= 80%	20 * perf. std. scale factor * response scale factor * knowledgeability scale factor	
OPTIONAL Students pursuing career that is pathway-related **Note: Optional points awarded only if District has received full 10 points for 1st measure, i.e., Board approval.**	2,3	Follow-up survey that samples all students	65% in pathway-related placement	20, if district has at least 65% pathway-related placement 10, if district has at least 50% pathway-related placement 5, if district has at least 35% pathway-related placement 0, otherwise.	
Career Pathway Performance Score - - - - >					

Outcomes, Measures, Performance Standards, and Performance Scoring for Educational Development Plans (EDPs)

Outcomes	MDCD Goal(s)	Measures	Performance Standards	Performance Scoring	Score
EDPs integrated into local district educational system	1	End-of-Year Report Benchmark 1 (Board Approval)	Level of 4	10, if district is reported at 4+ in end-of-year report; 5, if district is reported at 3 0, otherwise	
MS and HS buildings use EDPs	1	End-of-Year Report Benchmark 2	Level of 4	15, if district is reported at 4+ ; 10, if district is reported at 3; 5, if district is reported at 1,2; 0, otherwise	
High school students review EDPs annually and use them for course selection and career plans	1,3	End-of-Year Report Benchmark 4	Level of 4	15, if district is reported at 4+ ; 10, if district is reported at 3; 5, if district is reported at 1,2; 0, otherwise	
High school students maintain EDPs that meet state standards (exc. for parent endorsement)	1,3	10th grade EDP assessment **Pct.** = **(Q4/ Q2)*** 100 **Response** = **(Q2/Q1)** * 100	**Pct.** >= 85% **Response** >= 90%	20 * perf. std. scale factor * response scale factor	

High school students and their parents/guardians make informed choices about careers	2	10th grade EDP assessment **Pct.** = **(Q5/ Q2)*** 100 **Response** = **(Q2/Q1)** * 100	**Pct.** >= 60% **Response** >= 90%	10 * perf. std. scale factor * response scale factor	
EDPs used in course selection	3	12th grade student self-report **(Q9)** **Pct.** = %age. of non-zero responses that are 1,2 **NA** = % of responses = 0 **Response** = %age of 12th graders who complete self-report	**NA** < 25% **Pct** >= 80% **Response** >= 80%	15 * perf. std. scale factor * response scale factor * knowledgeability scale factor	
EDPs used to influence career choice	2	12th grade student self-report **(Q10)** **Pct.** = %age. of non-zero responses that are 1,2 **NA** = % of responses = 0 **Response** = %age of 12th graders who complete self-report	**NA** < 25% **Pct** >= 60% **Response** >= 80%	15 * perf. std. scale factor * response scale factor * knowledgeability scale factor	
EDP Performance Score - - - - >					

Outcomes, Measures, Performance Standards, and Performance Scoring for Career Awareness and Exploration (CAE)

Outcomes	MDCD Goal(s)	Measures	Performance Standards	Performance Scoring	Score
CAE adopted in local district educational system	1	End-of-Year Report Benchmark 1 (Board Approval)	Level of 4	10, if district is reported at 4+ in end-of-year report; 5, if district is reported at 3 0, otherwise	
Buildings have resources available	1,2	End-of-Year Report Benchmark 2	Level of 4	15, if district is reported at 4+ ; 10, if district is reported at 3; 5, if district is reported at 1,2; 0, otherwise	
Instructional units on careers incorporated into curriculum	3	End-of-Year Report Benchmark 4	Level of 4	15, if district is reported at 4+ ; 10, if district is reported at 3; 5, if district is reported at 1,2; 0, otherwise	
Career information resources used to select courses	2,3	12th grade student self-report **(Q5)** **Pct.** = %age. of non-zero responses that are 1,2 **NA** = % of responses = 0 **Response** = %age of 12th graders who complete self-report	**NA** < 25% **Pct** >= 60% **Response** >= 80%	30 * perf. std. scale factor * response scale factor * knowledgeability scale factor	

Career information used to influence career choice	2	12th grade student self-report **(Q6)** **Pct.** = %age. of non-zero responses that are 1,2 **NA** = % of responses = 0 **Response** = %age of 12th graders who complete self-report	**NA** < 25% **Pct** >= 80% **Response** >= 80%	30 * perf. std. scale factor * response scale factor * knowledgeability scale factor	
CAE Performance Score - - - - >					

Outcomes, Measures, Performance Standards, and Performance Scoring for Authentic Instruction (AI)

Outcomes	MDCD Goal(s)	Measures	Performance Standards	Performance Scoring	Score
AI adopted in local district educational system	1	End-of-Year Report Benchmark 1 (Board Approval)	Level of 4	10, if district is reported at 4+ in end-of-year report; 5, if district is reported at 3 0, otherwise	
Instructional teams participate and resources available	1	End-of-Year Report Benchmark 3	Level of 4	15, if district is reported at 4+ ; 10, if district is reported at 3; 5, if district is reported at 1,2; 0, otherwise	
Instructional use of AI activities	3	End-of-Year Report Benchmark 4	Level of 4	15, if district is reported at 4+ ; 10, if district is reported at 3; 5, if district is reported at 1,2; 0, otherwise	
Student achievement increases	3	Grades on student achievement sections of Michigan's Education-YES	District's average grade for these three components is B	30, if district has average of B or higher 20, if district has average of between C and B 10, if district has average of between D and C 0, otherwise	

Instruction uses AI to enhance learning	3	12th grade student self-report **(Q1)** **Pct.** = %age. of non-zero responses that are 1,2 **NA** = % of responses = 0 **Response** = %age of 12th graders who complete self-report	**NA** < 25% **Pct** >= 80% **Response** >= 80%	30 * perf. std. scale factor * response scale factor * knowledgeability scale factor	
BONUS Students authentically assessed	2,3	12th grade student self-report **(Q2)** **Pct.** = %age. of non-zero responses that are 1,2 **NA** = % of responses = 0 **Response** = %age of 12th graders who complete self-report	**NA** < 25% **Pct** >= 80% **Response** >= 80%	20 * perf. std. scale factor * response scale factor * knowledgeability scale factor	
AI Performance Score - - - - >					

Outcomes, Measures, Performance Standards, and Performance Scoring for Career and Employability Skills (CES)

Outcomes	MDCD Goal(s)	Measures	Performance Standards	Performance Scoring	Score
CES adopted in local district educational system	1	End-of-Year Report Benchmark 1 (Board Approval)	Level of 4	10, if district is reported at 4+ in end-of-year report; 5, if district is reported at 3 0, otherwise	
Buildings provide CES instruction	3	End-of-Year Report Benchmark 2	Level of 4	15, if district is reported at 4+ ; 10, if district is reported at 3; 5, if district is reported at 1,2; 0, otherwise	
Students leave school with improved employability skills	3	End-of-Year Report Benchmark 4	Level of 4	15, if district is reported at 4+ ; 10, if district is reported at 3; 5, if district is reported at 1,2; 0, otherwise	
Improved student attendance and high school retention	3	District grade on this indicator in Michigan's Education-YES	B	30, if district has B or higher 20, if district has C 10, if district has D 0, otherwise	

Instruction emphasizes CES	3	12th grade student self-report **(Q4)** **Pct.** = %age. of non-zero responses that are 1,2 **NA** = % of responses = 0 **Response** = %age of 12th graders who complete self-report	**NA** < 25% **Pct** >= 80% **Response** >= 80%	30 * perf. std. scale factor * response scale factor * knowledgeability scale factor	
CES Performance Score - - - - >					

Outcomes, Measures, Performance Standards, and Performance Scoring for Work-Based Learning (WBL)

Outcomes	MDCD Goal(s)	Measures	Performance Standards	Performance Scoring	Score
WBL strategies adopted in local district educational system	1	End-of-Year Report Benchmark 1 (Board Approval)	Level of 4	10, if district is reported at 4+ in end-of-year report; 5, if district is reported at 3 0, otherwise	
Implementation of WBL in collaboration with business	1	End-of-Year Report Benchmark 2	Level of 4	15, if district is reported at 4+ ; 10, if district is reported at 3; 5, if district is reported at 1,2; 0, otherwise	
Students participate in WBL and acquire skills	3	End-of-Year Report Benchmark 4	Level of 4	15, if district is reported at 4+ ; 10, if district is reported at 3; 5, if district is reported at 1,2; 0, otherwise	
High school students gain career information and knowledge from WBL activities	3	10th grade EDP assessment **Pct.** = **(Q6/ Q2)*** 100 **Response** = **(Q2/Q1)** * 100	**Pct.** >= 50% **Response** >= 90%	20 * perf. std. scale factor * response scale factor	

High school graduates gain career information and knowledge from WBL activities	2,3	12th grade student self-report **(Q13)** **Pct.** = %age. of non-zero responses that are 1,2 **NA** = % of responses = 0 **Response** = %age of 12th graders who complete self-report	**NA** < 25% **Pct** >= 60% **Response** >= 80%	15 * perf. std. scale factor * response scale factor * knowledgeability scale factor	
WBL influences career choice	2	12th grade student self-report **(Q14)** **Pct.** = %age. of non-zero responses that are 1,2 **NA** = % of responses = 0 **Response** = %age of 12th graders who complete self-report	**NA** < 25% **Pct** >= 80% **Response** >= 80%	25 * perf. std. scale factor * response scale factor * knowledgeability scale factor	
WBL Performance Score - - - - >					

Outcomes, Measures, Performance Standards, and Performance Scoring for Technology Education (Tech Ed)

Outcomes	MDCD Goal(s)	Measures	Performance Standards	Performance Scoring	Score
Tech Ed program adopted in local district educational system	1	End-of-Year Report Benchmark 1 (Board Approval)	Level of 4	10, if district is reported at 4+ in end-of-year report; 5, if district is reported at 3 0, otherwise	
Buildings offer tech ed instruction	1	End-of-Year Report Benchmarks 2 – 5 (average)	Level of 3.5	15, if district average is 3.5 + ; 10, if district average is [3, 3.5); 5, if district average is [2,3); 0, otherwise	
Resource availability in district	1	End-of-Year Report Benchmark 6c	Level of 4	15, if district is reported at 4+ ; 10, if district is reported at 3; 5, if district is reported at 1,2; 0, otherwise	

Students learn to solve problems with technology tools	3	12th grade student self-report **(Q3)** **Pct.** = %age. of non-zero responses that are 1,2 **NA** = % of responses = 0 **Response** = %age of 12th graders who complete self-report	**NA** < 25% **Pct** >= 80% **Response** >= 80%	60 * perf. std. scale factor * response scale factor * knowledgeability scale factor	
Tech Ed Performance Score - - - - >					

Outcomes, Measures, Performance Standards, and Performance Scoring for Comprehensive Guidance and Counseling (CGC)

Outcomes	MDCD Goal(s)	Measures	Performance Standards	Performance Scoring	Score
CGC adopted in local district educational system	1	End-of-Year Report Benchmark 1 (Board Approval)	Level of 4	10, if district is reported at 4+ in end-of-year report; 5, if district is reported at 3 0, otherwise	
Program implementation	1,3	End-of-Year Report Benchmark 6	Level of 4	15, if district is reported at 4+ ; 10, if district is reported at 3; 5, if district is reported at 1,2; 0, otherwise	
Students gain intended knowledge and skills in areas of affective, academic, and career planning	3	End-of-Year Report Benchmark 7	Level of 4	15, if district is reported at 4+ ; 10, if district is reported at 3; 5, if district is reported at 1,2; 0, otherwise	
Improved student attendance and high school retention	3	District grade on this indicator in Michigan's Education-YES	B	20, if district has B or higher 15, if district has C 10, if district has D 0, otherwise	

CGC model has helped students select appropriate courses	3	12th grade student self-report **(Q15)** **Pct.** = %age. of non-zero responses that are 1,2 **NA** = % of responses = 0 **Response** = %age of 12th graders who complete self-report	**NA** < 25% **Pct** >= 80% **Response** >= 80%	20 * perf. std. scale factor * response scale factor * knowledgeability scale factor	
CGC model has prepared graduates for next career step	3	12th grade student self-report **(Q16)** **Pct.** = %age. of non-zero responses that are 1,2 **NA** = % of responses = 0 **Response** = %age of 12th graders who complete self-report	**NA** < 25% **Pct** >= 80% **Response** >= 80%	20 * perf. std. scale factor * response scale factor * knowledgeability scale factor	
CGC Performance Score - - - - >					

Outcomes, Measures, Performance Standards, and Performance Scoring for Career Assessment (CA)

Outcomes	MDCD Goal(s)	Measures	Performance Standards	Performance Scoring	Score
CA process adopted by local district educational system	1	End-of-Year Report Benchmark 1 (Board Approval)	Level of 4	10, if district is reported at 4+ in end-of-year report; 5, if district is reported at 3 0, otherwise	
MS and HS buildings use developmentally appropriate CAs	1	End-of-Year Report Benchmark 2	Level of 4	15, if district is reported at 4+ ; 10, if district is reported at 3; 5, if district is reported at 1,2; 0, otherwise	
Students use CAs to choose courses and develop career plans	3	End-of-Year Report Benchmark 5	Level of 4	15, if district is reported at 4+ ; 10, if district is reported at 3; 5, if district is reported at 1,2; 0, otherwise	
High school students use CA results to plan courses	2	10th grade EDP assessment **Pct.** = **(Q7/ Q2)*** 100 **Response** = **(Q2/Q1)** * 100	**Pct.** >= 85% **Response** >= 90%	20 * perf. std. scale factor * response scale factor	

CAs used to select courses	3	12th grade student self-report **(Q11)** **Pct.** = %age. of non-zero responses that are 1,2 **NA** = % of responses = 0 **Response** = %age of 12th graders who complete self-report	**NA** < 25% **Pct** >= 80% **Response** >= 80%	20 * perf. std. scale factor * response scale factor * knowledgeability scale factor	
CAs used to influence career choice	2	12th grade student self-report **(Q12)** **Pct.** = %age. of non-zero responses that are 1,2 **NA** = % of responses = 0 **Response** = %age of 12th graders who complete self-report	**NA** < 25% **Pct** >= 80% **Response** >= 80%	20 * perf. std. scale factor * response scale factor * knowledgeability scale factor	
CA Performance Score - - - - >					

4. Consultation on Measurement Issues

One of the tasks required under the contract called for staff from the Upjohn Institute to attend various meetings to provide consultation on measurement issues. We have fulfilled the terms of this task by meeting weekly with the MDCD accountability team, attending three meetings of the accountability system referent group plus attending a meeting of an ad hoc team of educational measurement and evaluation experts, and presenting at the annual OCTP fall meeting.

5. Analysis Plan

Four sources of data are used in the accountability system. Data come from the annual benchmarks report from each region, from the review of EDPs of 10th graders, from the self-reports of 12th grade students, and from the Education YES system. Optionally, some districts may provide data from a follow-up survey of graduates. With all of this data, the MDCD must undertake one type of analysis – the calculation of district accountability – and may pursue two other levels of analysis. The first level is tabular analyses of component scores (and changes over time in component scores), and the second level is multivariate regression analysis of the component scores. Each of these will be described in turn.

Accountability calculation. The scoring algorithm described in table 1 must be applied to data from each participating district for its regional priorities and for Career Pathways (CP) and EDPs, which are the state priorities. One way to accomplish this would be to use spreadsheet software. For example, a nine-sheet table could be set up, where each sheet is one of the components. The rows of each sheet would be participating districts. The columns would be the measures of the outcomes that are used in the accountability system. For example, for CP's, there are six mandatory and one optional outcomes, but there are 11 measures that are used to calculate the accountability score. The 11 columns (A - K) would be as follows:

1. CP Benchmark 1 progress report (values of 0 - 5)
2. CP Benchmark 2 progress report (values of 0 - 5)
3. CP Benchmark 4c progress report (values of 0 - 5)
4. Response rate for 10th grade EDP assessment (0 - 100%)
5. Percentage of students with EDPs that have CP identified (0 - 100%)
6. Response rate for 12th grade self-report (0 - 100%)
7. Percentage of 12th grade self-reports received that have Q.7 = 1 or 2 (0 - 100%)
8. Percentage of 12th grade self-reports received that have Q.7 = 0 (NA) (0 - 100%)
9. Percentage of 12th grade self-reports received that have Q.8 = 1 or 2 (0 - 100%)

10. Percentage of 12th grade self-reports received that have Q.8 = 0 (NA) (0 - 100%)
11. (Optional) Percentage of follow-up survey respondents with pathway-related placement (0 - 100%)

Then the next 7 columns (L - R) would be the accountability score for each of the outcomes. The first three columns would be based on the Benchmark progress reports. The value in column L for a district would be 10, if the progress report value for benchmark 1 was 4 or 5; 5 if the value was 3; and 0 otherwise. The values in columns M and N would be 15 if the progress report values for benchmarks 2 and 4c were 4 or 5; 10 if the values were 3; 5 if the values were 1 or 2; and 0 otherwise.

The value in column O is calculated from the data from the 10th grade EDP assessment. First, the EDP assessment response rate is converted to a response rate factor. This factor = 1.0, if the response rate is greater than or equal to 90%, and equals the response rate percentage divided by 100, otherwise. Next, the percentage of students with EDPs that have a CP identified is converted to a performance score scale factor. This factor = 1.0, if the percentage is greater than or equal to 85%, and equals the percentage of students with CP's identified divided by 100, otherwise. Then column O = 20 * response rate factor * performance score scale factor.

The values in columns P and Q are calculated from the data from the 12th grade education and career plan self-report. First, we have to account for whether students are aware of the component. Our basic assumption is that if more than one-quarter of the 12th grade students report that they have no idea what the component means or is not applicable to them then the district has not adequately implement the component. If more than 25% of the responses to question 7 (8) on the self-report = 0 (not applicable), then Column P (Q) is given a value of 0. Assuming that these values do not exceed 25 percent, next the self-report response rate is converted to a response rate

factor. This factor = 1.0, if the response rate is greater than or equal to 80%, and equals the response rate percentage divided by 100, otherwise.

Finally, the percentage of students who agree or tend to agree that CP's helped them select courses in high school (Q.7) and that CP's helped them choose an educational pathway or career after high school (Q.8) are converted to performance score scale factors. For Q.7, this factor = 1.0, if the percentage is greater than or equal to 80%, and equals the percentage of students who agree or tend to agree divided by 100, otherwise. For Q.8, this factor = 1.0, if the percentage is greater than or equal to 60%, and equals the percentage of students who agree or tend to agree divided by 100, otherwise. Then columns P and Q = 20 * response rate factor * performance score scale factor.

The last column (R) is the score for the optional placement rate results from a follow-up survey of students. If the CP-related placement rate (into educational field or employment) is greater than or equal to 65%, then column R = 20; if it is between 50% and 65%, then the value is 10; and if it is between 35% and 50%, then the value is 5. Otherwise it is 0.

The district's performance score for Career Pathways would be the sum of columns L through R. If the performance score exceeds 85, then the district will be declared **Accountable** for Career Pathways. If it is less than 85, then the district will be declared as **Progressing toward Accountability**. Similar calculations would be done for all of the other components on the remaining eight sheets of the worksheet.

Cross-tabular analyses. As part of its monitoring function, MDCD will undertake analyses of the district's performance scores by component. The first type of analyses would be to produce tables that display average performance scores by various district characteristics. The columns of the tables would always be whether or not the component was a priority. The rows of the tables

would include characteristics such as size of district (divided into several classes), type of district (rural, urban, suburban), and region of the state.

A prototype of the table for the Comprehensive Guidance and Counseling (CGC) component is shown in table 2.

Table 2

Prototype Cross-Tabular Analysis

	Component: Comprehensive Guidance and Counseling	
	Priority Status	
	Regional Priority	Not Reg. Priority
Size of District		
< 2,000	83.2	65.1
2,001 - 4,000	86.0	68.2
4,001 - 8,000	90.6	77.3
8,001 - 15,000	92.4	88.1
15,001 +	93.1	89.0
Type of District		
Urban	87.4	76.1
Suburban	90.6	72.3
Rural	85.1	68.3
Region		
Southeast	90.8	78.3
Southwest	89.6	76.1
Central	83.8	68.3
Northern LP	79.5	70.8
UP	81.3	72.0

What can be learned from this table if these were the real numbers is that, not surprisingly, for comprehensive guidance and counseling, districts in which CGC is a priority have much higher performance than districts where it is not a priority. Furthermore, it appears as if the size of the district is directly related to CGC performance. The average performance scores increase as districts get larger. This would be useful because it would suggest that technical assistance and monitoring for comprehensive guidance should be directed toward smaller districts.

The table also suggests that suburban school districts seem to be outperforming urban and rural districts. However, this is a single point, and so the finding should be monitored over time. Similarly, the table shows that the performance scores for the Southeast and Southwest corners of the state are higher than the rest of the state. However, these results should be monitored over time and across components.

Regression analyses. Cross-tabular analyses can be useful for generating hypotheses, but are of limited value for testing hypotheses. For example, the above data are consistent with the hypotheses that CGC is more likely to be effective in larger districts, suburban districts, and in the Southeast and Southwest regions of the state. But because the correlation between these three characteristics is reasonably high–a disproportionate share of larger districts are suburban and located in the Southeast or Southwest regions--we don't know if the positive performance is due to size of district, type of district, or region. Or the key explanatory factor may be something that is correlated to those three characteristics. For example, the strength of the labor market in the region may be the most important factor in explaining performance. But if the strength of the local labor market (measured by job growth, say) is correlated with enrollment size, presence of suburbs, and region, then the cross-tabular analyses may be misleading.

An approach that would be useful in actually ferreting out the key determinants of performance would be a regression framework. The dependent variable in the models would be component performance scores by district. Independent variables would include district characteristics such as size, type (urban, suburban, or rural), per pupil spending, percent of students eligible for free and reduced price lunch, race/ethnicity, and so on. Independent variables may also include local economic variables such as the unemployment rate, poverty rate, average income level, and so forth. These variables are available on a county-by-county basis. Another key independent variable would be whether the district is implementing the component outside of the CPS initiative. It may be useful to use the district's other component scores as control variables as well.

In short, the model would look like the following:

$$Score_{ijt} = f(District_{jt}, Econ_{jt}, Imp_{ij}, Score_{k=i,jt}, Dummy_j)$$

where $Score_{ijt}$ = Performance score for component score i in district j in year t;
$District_{jt}$ = Characteristics of district j in year t;
$Econ_{jt}$ = economic indicators for area in which district j is located in year t;
$Score_{k=ijt}$ = component performance scores components other than i in district j in year t
$Dummy_j$ = 1 for district j; 0 for all other districts

Estimation of this model will allow MDCD to have some analytical confidence about exactly what factors "explain" good performance.

6. Summary

In summary, staff from the Upjohn Institute have been heavily engaged in virtually every step of the development of an accountability system for the Career Preparation System since Spring 2002. We reviewed and help to further refine the logic model. We met with groups from the field and

made modifications to the logic model and accountability system. We designed and helped to field test data collection forms, and we laid out the rudiments of an analysis plan that MDCD can use once data start to be collected. It is our belief that the accountability system that has been designed will be quite helpful to MDCD in monitoring the performance of the system and in identifying ways to improve it. Most importantly, the accountability system will be helpful to local districts as they work to implement the most effective activities within the components of the Career Preparation System to help young people prepare for education and careers.

Appendix: Data Collection Forms

12th Grade Career and Educational Plans Report

To be completed by all 12th grade students during Semester 2

Introduction: *Our school district is interested in your opinion about the types of information and activities that were provided to you concerning education and career plans after high school. Please answer the following questions and mark your answers on the scan sheet. This report will take only a few minutes to complete.*

Directions: **For each of the items, indicate the extent to which you agree or disagree with the statement.**

Circle the 0 under "Not applicable" if you think the item is asking you about something that did not happen in your school and skip to the next item.

	Agree	Tend to Agree	Tend to Disagree	Disagree	Not applicable
1. My teachers regularly used real-life examples that helped me understand the material.	1	2	3	4	0
2. I have participated in at least one project in school that was presented to and judged by an adult who was not my teacher.	1	2	3	4	0
3. In my classes, I made things and solved real-world problems by using knowledge, materials, tools, machines, and skills.	1	2	3	4	0
4. My school taught me skills like teamwork, problem solving, organizational skills, good attendance, and other "employability" skills.	1	2	3	4	0
At school, I explored careers, and what I learned helped me decide					
5. what classes to take **during** high school.	1	2	3	4	0
6. my education and career plans **after** high school graduation.	1	2	3	4	0
My school organized classes into **career pathways** and I chose a pathway(s) that helped me decide					
7. what classes to take **during** high school.	1	2	3	4	0
8. my education and career plans **after** high school graduation.	1	2	3	4	0
My school had students use an **education development plan (EDP)**, and my EDP helped me decide					
9. what classes take **during** high school.	1	2	3	4	0
10. my education and career plans **after** high school graduation.	1	2	3	4	0
My school had students take career interest or aptitude tests. The results helped me decide					
11. what classes to take **during** high school.	1	2	3	4	0
12. my education and career plans **after** high school graduation.	1	2	3	4	0
My school or teachers helped me arrange activities at a workplace or business. What I learned there helped me decide					
13. what classes to take **during** high school.	1	2	3	4	0
14. my education and career plans **after** high school graduation.	1	2	3	4	0
My school's counseling program helped me decide					
15. what classes take **during** high school.	1	2	3	4	0
16. my education and career plans **after** high school graduation.	1	2	3	4	0

Thank you!

10th Grade EDP Assessment Summary Report

Directions:	Use information collected on the EDP Assessment Talley Sheet to complete this report.

1. Number of students in sample? _____

Items 2 – 5 refer specifically to students' <u>education development plans</u>.

2. Number of EDPs located? _____
3. Number of EDPs that have the following essential elements:
   a. Personal Information? _____
   b. Career Goal(s) that include Career Pathway? _____
   c. Education/Training Goal(s)? _____
   d. Career Assessment results? _____
   e. Plan of Action with at least one of the following: (i) Career awareness/exploration activities, (ii) Work-based activities, or (iii) Course selections that support career goals(s)? _____
4. Number of EDPs that have all essential elements listed in 3a-e? _____
5. Number of EDPs with parent signature/endorsement? _____

Items 6 – 7 ask specifically about work-based activities and career assessment results. The documents used as evidence may be an EDP or may be another document such as a portfolio. The key is that the document is available to students and parents as they make course selection and career decisions.

6. **(Work-based activities supplemental item.)**
   Number of students in sample with documents that display work-based activities that have occurred or that are planned? _____
7. **(Career Assessment supplemental item.)**
   Number of students in sample with documents that have career assessment results? _____

I certify that this information is complete and accurate to the best of my knowledge.

Signature: _____ Dated: _____

Printed Name: _____

District Superintendent (or designee) Signature: _____

10th Grade EDP Assessment Tally Sheet

Directions: Construct a sample of all 10th graders in the district according to the Sampling Directions. Locate the students' current EDPs and complete this form by tallying the information.

1. Number of students in sample? _____

Items 2 – 5 refer specifically to students' <u>education development plans</u>.

2. Number of EDPs located? _____

3. Number of EDPs that have the following essential elements:

   a. Personal Information? _____

   b. Career Goal(s) that include Career Pathway? _____

   c. Education/Training Goal(s)? _____

   d. Career Assessment results? _____

   e. Plan of Action with at least one of the following: (i) Career awareness/exploration activities, (ii) Work-based activities, or (iii) Course selections that support career goals(s)? _____

4. Number of EDPs that have all essential elements listed in 3a-e? _____

5. Number of EDPs with parent signature/endorsement? _____

Items 6 – 7 ask specifically about work-based activities and career assessment results. The documents used as evidence may be an EDP or may be another document such as a portfolio. The key is that the document is available to students and parents as they make course selection and career decisions.

6. **(Work-based activities supplemental item.)**

   Number of students in sample with documents that display work-based activities that have occurred or that are planned? _____

7. **(Career Assessment supplemental item.)**

   Number of students in sample with documents that have career assessment results? _____