2010 Evaluation of the Centers of Excellence

Entities established within the Minnesota State Colleges and Universities system

APRIL 2010

2010 Evaluation of the Centers of Excellence

Entities established within the Minnesota State Colleges and Universities system

April 2010

Prepared by:
Wilder Research

Wilder Research
451 Lexington Parkway North
Saint Paul, Minnesota 55104
651-280-2700
www.wilderresearch.org

Contents

Figures

Acknowledgments

We wish to thank many people in the Office of the Chancellor for their help in the course of this evaluation: Leslie Mercer, Todd Harmening, Michael Murphy, Mary Rothchild, and Craig Schoenecker and others on the research staff. We also thank the Center Directors Bruce Lindberg, Jane Foote, Karen White, and Ron Bennett, as well as other Center staff members, for their answers to many questions and their assistance in identifying a wide range of Center stakeholders and participants. The authors appreciate their enthusiasm for their work and engagement with the evaluation process.

The Wilder Research team included:

Co-Principal Investigators: Greg Owen, Consulting Scientist
Ellen Shelton, Research Scientist

Research associate: Brian Pittman

Stakeholder survey team: Karen Ulstad, Coordinator

Other Wilder Research staff who contributed to this report were:

Natalie Alizaga
Jacqueline Campeau
Marilyn Conrad
Phil Cooper
Thalia Cooper
Louann Graham
Ron Mortenson
Linda Sjostrom
Abby Struck
Mary Ann Thoma

Introduction and background

In 2005 the Minnesota State Legislature passed legislation and appropriated funding to create Centers of Excellence as part of the Minnesota State Colleges and University System (MNSCU). The MnSCU Board of Trustees designated the following Centers:

- Minnesota Center for Engineering and Manufacturing Excellence (MNCEME)
- HealthForce Minnesota
- Advance IT Minnesota
- 360° Manufacturing and Applied Engineering Center of Excellence

Each Center was expected to become a regional or national leader within a specific area of education and training, demonstrate strong ties to employers, and offer a continuum of academic content, a variety of student engagement strategies and entry points, and strong partnerships between four-year and two-year institutions. The authorizing legislation also specified that each Center would be built on strong existing programs, improve performance in related programs, strengthen the quality and numbers of graduates, and integrate academic and training outcomes with business interests and opportunities.

During the first three years of Center operations, Wilder Research conducted a wide range of evaluation activities including site visits, meetings with institutional partners, baseline assessments, analysis of centralized data sources, key informant interviews and document analysis. Overall results from the first three years of evaluation indicate a strong start for each Center, including evidence of the use of innovative strategies for engaging business and academic partners, as well as the successful implementation of new or enhanced methods for reaching students with a diversity of ages and program needs.

During 2009 and 2010, Wilder Research was again selected to conduct further evaluation to examine Center progress in each of the following six core goal areas:

1. Create new pathways for communication among all partners including industry, education, and learners
2. Identify industry opportunities and the related workforce preparation these opportunities require
3. Help learners discover and prepare for careers in center aligned fields

4. Encourage cross-campus activity to strengthen courses, programs, and learning opportunities

5. Champion changes in the content and delivery of educational services

6. Produce revenue and leverage additional resources

These goal areas are based on the original legislative mandate by which the Centers were created; guidance from the Office of the Chancellor; and in-depth conversations with trustees, institutional administrators, faculty, K-12 and industry partners, and Center directors regarding the common goals to which all Centers should aspire. It is noteworthy that this set of goals is unique to the Centers of Excellence and is based on a core set of innovative ways in which Centers seek to add value for students, institutions, and industry. No other component of the Minnesota State Colleges and Universities system is explicitly mandated or similarly positioned to advance this combination of goals.

The strategic directions of the system and overall Center goals

The common goals of the Centers of Excellence appear to be closely aligned with the strategic priorities identified in the system's most up-to-date strategic plan document. Specifically, according to the draft plan currently under consideration (as of March 17, 2010) the Minnesota State Colleges and Universities are expected to thrive during the next decade if supported by "… heightened leadership, support for our students, recognition in pursuit of our collaborative and innovative capacity, and new levels of cooperation with and accountability to our internal and external stakeholders."

The specific strategic directions embodied in the final system-wide plan will likely include the following elements:

1. Increased access, opportunity, and success

   This priority is advanced by the Centers' work to help learners to discover and prepare for center-aligned careers, as well as by their work to create new pathways for communication among all partners including learners.

2. Ensure high quality programs and services through a commitment to academic excellence and accountability

   This priority is advanced by the Centers' work in the areas of championing changes in the content and delivery of educational services, and encouraging cross-campus activity to strengthen courses, programs, and learning opportunities.

3. Provide programs and services to enhance the global economic competitiveness of the state, its regions, and its people

   This priority is advanced by the Centers' work to identify industry opportunities and the related workforce preparation these opportunities require.

4. Innovate to meet current and future educational needs

   This priority is advanced by the Centers' work in the areas of creating new pathways for communication among all partners including industry and education, as well as the in producing changes in the content and delivery of educational services.

5. Ensure the long-term viability of public higher education in Minnesota

   This priority is advanced by the Centers' work to produce revenue and leverage additional resources.

One element that is emphasized as part of the overall system strategic plan but is less visible in the goals of the Centers of Excellence is the "…accountability to both internal and external stakeholders." It may be important for the Centers to consider adding similar language to their goal statements to more explicitly reflect what has already become a strong commitment to measurement, evaluation, and external review.

Collaboration and innovation are challenging goals to evaluate. The evaluation of the Centers in the past four years has included a variety of methods for assessing the work in these areas. The learning from these efforts is likely to be useful to the system as a whole as well as to the Centers.

Key activities of the Centers

Based on Center documents and interviews with Center directors, Wilder Research identified 8 to 12 activities of each Center that reflect the most significant investment of energy and resources and are most likely to contribute to accomplishing the goals of the Centers. These are listed in the Appendix to this report.

For each Center, key activities include a mix of the following:

Outreach, marketing and public relations, such as coordination and financial support for the west central Minnesota Dream It. Do It. campaign (360°); promotion of public visibility for manufacturing and engineering through web site functionality including social networking, updates, etc. (MNCEME); a comprehensive IT career awareness and success program that includes online resources and campus-based events (Advance IT);

and camps such as the "Scrubs Camp" for career awareness and other hands-on career preparation activities for high school students and adults (HealthForce).

Coordination of academic activities across partners, such as each Center's RFP process for funding innovation, course and program upgrades, outreach activities, and other activities to promote a coordinated approach to career development and preparation.

Industry coordination and support, such as the "IDEA competition" for potential entrepreneurs (360°, in partnership with the Northwest Minnesota Ingenuity Frontier); "Maximize Minnesota" events on energy management for business and industry (MNCEME); management of the Secure360 conference (Advance IT, as one of four organizational members of the Upper Midwest Security Alliance); and participation in the Coalition for Continuous Improvement in Healthcare (HealthForce).

Support for efforts to strengthen education and training opportunities for learners, such as development of the new online certificates (360°), a Bachelor of Science in Engineering opportunity on the Iron Range (MNCEME), updating of course curriculum and conversion to online delivery in multiple fields in IT and security (Advance IT), and support for the development of the Clinical Lab Science and Doctorate of Nursing Practice programs (HealthForce).

Evaluation methods and data sources

The current evaluation seeks to describe and assess the key activities of the Centers of Excellence during the 2009-2010 academic year with a focus on the visibility and reputation of Centers, industry involvement and integration, outreach and service to learners, cross-campus activity and cooperation, and overall viability and long-term value to the state of Minnesota. To conduct this evaluation, Wilder Research identified the key activities through which Centers seek to accomplish their goals, then collected information about implementation and impacts through the following strategies:

Reports from each Center

Using common definitions and data reporting templates, each Center provided information to Wilder Research on:

- The involvement of industry partners
- Outreach efforts to reach K-12 students and their teachers and counselors
- Outreach efforts to reach other potential higher education students

- Funding leveraged from sources other than the initiative funding from the system

In addition, each Center provided description of their efforts to market the Center's fields, associated programs, and the Centers and their activities.

Reputational survey

With the assistance of the Chancellor's Office, a range of industry association and state agency representatives were identified, including leaders in workforce development, manufacturing, technology, engineering, and health and aging services. In addition, Center directors helped to identify a small number of peer organizations and their leaders. Questions in the survey asked about the extent to which respondents were aware of the Centers of Excellence, and their perceptions of the Centers if they are aware of them.

Stakeholder survey

To assess outcomes of Center activities, Wilder Research surveyed individuals most familiar with those activities. An overall list of potential respondents – actively involved stakeholders, able to report knowledgeably on the Centers' work – was submitted by Center directors. To avoid bias, Wilder Research made the final selection of those to be interviewed. In the limited time available, 76 interviews were completed for this report with college and university administrative staff and faculty and industry partners. These included:

1. Number and affiliation of respondents to the stakeholder survey, by Center

	360°	MNCEME	Advance IT	HealthForce	Total
Industry partners	11	8	10	8	37
Faculty	5	1	4	4	14
Administrators	4	7	4	10	25
Total	20	16	18	22	76

To obtain the most knowledgeable perspective on certain key activities, we also surveyed four representatives of K-12 partners who were significantly involved in the Centers' work with K-12 outreach and support in strengthening secondary STEM (science, technology, engineering, and mathematics) education. Two of these were affiliated with MNCEME and two with HealthForce.

Most stakeholders are aware of some but not all of the activities of the Center with which they are affiliated. Similarly, most are able to report knowledgeably on outcomes only for those activities with which they are most directly involved. Moreover, each stakeholder

group (faculty, administrator, industry representative, or K-12 representative) has a different perspective on outcomes. To ensure that respondents were only asked to answer questions about matters with which they were well-informed, each interview was individually tailored to include only those questions relevant for their stakeholder group.

To learn more about how stakeholders engaged with Centers of Excellence, the survey included detailed questions about the nature of participation for each stakeholder. When a respondent's initial answers demonstrated a clear and more in-depth knowledge of a particular activity's impacts, more detailed follow-up questions were asked about those impacts.

The stakeholder survey was designed to go beyond opinions and collect observable facts. It included a number of very specific yes or no questions about specific kinds of changes that the respondent might have observed (for example, increased collaboration among institutions, or shared courses or positions, or students better prepared for careers in the field). In most cases, a "yes" response was followed up by a request for a brief but specific instance of the change or changes. For example, if a respondent reported that they had observed increased collaboration among institutions, they were asked to provide a specific example or description of how collaboration had increased. Many of these follow-up questions were specifically worded to fit the different perspectives of industry and K-12 partners and college or university faculty and administrators.

Because of the individualization of interviews, the number of responses to an individual follow-up question could vary significantly based on subject matter knowledge and a respondent's group.

Respondents were asked to describe only outcomes that have already occurred. Results reported here thus do not include outcomes that are likely in the future, such as increased enrollments expected due to a new program that has already been developed but will not start until this coming fall.

Data on new programs and program graduates

Data on programs and program graduates were also obtained from system administrative records. This information was not available for this report, but will be provided subsequently.

Findings

Findings about the scope of effort and level of activity are derived from documentation maintained by the Centers, compiled and analyzed by Wilder Research. Findings about the impact of the Centers are derived mainly from Wilder's stakeholder survey, conducted in March 2010, with additional information based on Center records.

Scope of effort and activity

Outreach and engagement efforts

Reports provided from Center records show the extent of Centers' outreach efforts with a number of different key groups: industry partners, potential students currently in K-12 grades, potential students who are adults, and general marketing to the public at large.

Industry involvement

Information on industry involvement during 2008-09 shows a continuing trend of steady participation, with some increase in engagement with industry organizations and associations.

Firms whose involvement is documented by the Centers fit into three categories. The first category includes businesses, producers, or firms with which the Center has a commercial or consulting relationship. In the case of HealthForce, this category includes hospitals and clinics. Category two includes organizations and associations related to the industry, sector, or general economic or workforce development (such as the Minnesota High Tech Association, the non-profit Workforce Development, Inc., or a hospital foundation). The final category includes government (local, state, and federal) entities or departments, such as school districts or public health departments. This also includes public higher education institutions not in the state colleges and universities system.

Centers have identified the direct involvement of 383 unique organizations from 2006 through 2009. This includes 132 firms who were identified in more than one year. It should be noted that due to leadership turnover at HealthForce during 2007, an industry involvement worksheet was not collected for that year, so the overall number and 2007 numbers under-represent the actual number of firms involved in the Centers. Figure 2 below summarizes the information. The column headed "any year" shows the unduplicated number of organizations that have been involved in at least one year. The final column, headed "multiple years," shows the number of organizations that have been involved with the Center over more than a single year.

2. Organizations directly involved with the Centers of Excellence, 2006-2009

	2006	2007	2008	2009	Any year	*Multiple years*
Businesses and producers	130	100	120	121	285	*102*
Organizations and associations	25	8	33	39	74	*22*
Government entities and departments	8	4	14	11	24	*8*
Total (unduplicated)	**163**	**112**	**167**	**171**	**383**	***132***

Note: *2007 does not include complete numbers for HealthForce.*

The kinds of involvement tracked by the Centers include hosting student interns, requesting research or consultation, financial (including in-kind) support, and other types of involvement. However, across all years, the most significant type of involvement has been participation in advisory committees and other workgroups. See Figure 3 for the numbers of firms and hours of participation in Center groups.

3. Organizations involved with Center advisory and other work groups, by Center, 2009

	360°	Advance IT	HealthForce	MnCEME
Advisory group (firms)	10	20	11	30
Advisory group (hours)	95	200	69	320
Other workgroups (firms)	67	44	14	14
Other workgroups (hours)	2,282	981	117	760

The differences among Centers in hours of participation reflect different types of engagement and activity across the Centers. For example, the large number of workgroup hours at 360° reflects the involvement of Dream It. Do It. groups at each of the partner institutions, as well as the participation of advisory groups for different grants, and partnership with the Ingenuity Frontier on the IDEA competition.

K-12 outreach

To better illustrate the extent of the Centers' outreach activities among K-12 students, Center staff reported their 2009 (calendar year) activities, including the duration and number of participants for each. Not including Project Lead the Way, 44 Center-related outreach activities were documented. These reached 4,469 youth (ages 9 - 18) and accounted for approximately 35,000 participant-hours of outreach (Figure 4).

Advance IT had the most separate activities (20), and MNCEME had the most participants (2,796) and participant hours (17,400). MNCEME's large number of participants and hours reflects their work with four large multi-day summer camps and one large speaking event with Ann Bancroft (with a reported attendance of 2,050).

4. K-12 outreach activities by type of outreach and Center, 2009 calendar year

	360°	Advance IT	HealthForce	MNCEME	Total
Camps, workshops, or academies	7	8	2	8	25
Participants	431	183	485	296	1,395
Participant-hours	5,250	4,451	3,349	13,300	26,450
Events, presentations, or career days	6	12	0	1	19
Participants	554	370	-	2,050	2,974
Participant-hours	3,324	1,250	-	4,100	8,674
Total activities	**13**	**20**	**2**	**9**	**44**
Participants	**985**	**553**	**485**	**2,796**	**4,469**
Participant-hours	**8,574**	**5,701**	**3,349**	**17,400**	**35,124**

Note: *Numbers for participant hours are estimates computed by Wilder Research based on Center documentation of participation and hours of duration.*

In addition, HealthForce reported activities in support of regular full-year academic programs in two high schools:

- **Bloomington Public Schools:** Help support the creation of a "college in the schools" Heath Sciences/Biomedical program for 4,126 high school students in a highly diverse community.
- **Minneapolis Community and Technical College:** Help create a bridge from high school to college for 297 students requiring remediation.

MNCEME and 360° also have significant involvement in the Project Lead the Way (PLTW) program in middle schools and high schools around the state. MNCEME supports a PLTW outreach coordinator as part of its main Center staff. MNCEME reporting shows that their PLTW efforts fully certified 38 teachers and administrators in seven independent school districts during the 2009 calendar year (Figure 5). All together, 130 teachers and administrators in 19 independent school districts have been fully certified (and are currently still certified) since 2006, through the outreach efforts by the

MNCEME PLTW coordinator. This certification allows students completing courses to be eligible for college credits.

5. Number of PLTW certifications of people and school districts in Minnesota, 2006-2009

	2006	2007	2008	2009
Newly certified teachers and administrators	27	56	9	38
Newly certified school districts	4	7	2	7
Total number of certified teachers and administrators	**27**	**82**	**91**	**130**
Total number of certified school districts	**4**	**11**	**13**	**19**

Source: *Records maintained by Project Lead the Way (PLTW) / Minnesota Center for Engineering and Manufacturing Excellence (MNCEME); calculations by Wilder Research.*

Adult outreach and noncredit activities

During 2009, 360° reported two main adult outreach activities serving 29 west central Minnesota guidance counselors and technical education teachers. The two single day workshops shared information regarding careers and technology in the industry and accounted for a total of 232 participant hours. The workshops were provided through Minnesota State Community and Technical College.

Advance IT reported a total of 935 participants and 12,952 participant hours in adult noncredit and outreach activities. These include:

- **Secure 360 Conference.** Two day industry gathering and conference. (518 total people)
- **Secure 360 Hacker Workshop.** Single day workshop on IT auditing from the hacker's perspective. (42 total people)
- **Check Point Encryption Training.** Five single day sessions with State of Minnesota employees and two single day sessions with Minnesota State Colleges and Universities ITS staff. (59 total people)
- **Application Development Security.** Three two-day sessions with Minnesota State Colleges and Universities ITS staff and two sessions with State of Minnesota employees. (166 total people)
- **Executive Briefing.** A single day session with State of Minnesota employees. (150 total people)

During 2009, MNCEME did adult outreach and noncredit activities with 215 participants totaling 1,368 participant hours. These include:

- **Maximize Minnesota on ISO 50001.** Event included people from industry, DEED, and the State Legislature. (38 total people)
- **Customized training.** Online training through Alexandria Technical College with incumbent workers from Douglas Machine. (68 total people)
- **Metal fabrication training.** Offered through the Minnesota Manufacturing Sector Initiative serving low-income and incumbent workers wanting to prepare for careers in manufacturing and metalworking. (9 total people)

During 2009, HealthForce adult outreach and noncredit activities included 1,814 participants. Examples include:

- **Adult Scrubs Camp.** With Winona State University. (89 total people)
- **Support diverse incumbent employees to advance in health care careers.** With Project for Pride in Living. (148 total people)
- **Support bilingual community residents to enter health care careers.** With Mankato Public Schools. (33 total people)
- **Educate teen parents about health care career options by redesigning STEM curriculum.** With Hired, Inc. (195 total people)
- **Health Support Specialist program development.** With Aging Services. (11 total people)
- **Integrate simulation in nursing curriculum.** With Winona State University. (1,000 total people)
- **CNA training for White Earth Indian Reservation.** With Northland College. (128 total people)
- **Further develop LEAD Collaborative for statewide implementation.** With Winona State University, Minnesota State University–Moorhead, Alexandria Technical College, and Northland College. (188 total people)
- **Support first doctoral cohort.** With Winona State University, Metropolitan State University, Minnesota State University–Moorhead, and Minnesota State University, Mankato. (17 total people)

Through these and other events and activities, the four Centers directly reached approximately 3,000 adults. These include incumbent workers, displaced workers and other potential learners, as well as a variety of others including teachers, guidance counselors, and workforce professionals. These non-credit activities add substantially to the impacts that are achieved through regular for-credit courses of affiliated departments and programs.

Web presences and social media

All four Centers have significant internet presences. Each has its own Center website and all also use social media for marketing and to reach potential audiences. Below are some of the highlights of the Centers' internet presences:

- **360°.** Between July 1, 2009 and December 31, 2009, the 360° website had 20,568 page views from 8,462 unique visitors. During the same time, the Dream It. Do It. website had 12,508 page views from 8,523 unique visitors. Facebook generates the largest amount of traffic to 360°'s websites. During those six months, two-thirds (68%) of traffic to the 360° website and 87 percent of traffic to the Dream It. Do It. website was generated through their presence (advertisements and the 360° group page) on Facebook. The numbers for the 360° website were up considerably in just the first six months of fiscal year 2010 over the entire 2009 fiscal year (12,749 page views from 2,899 unique visitors).

- **MNCEME.** Between May 1, 2009 and December 31, 2009, the MNCEME website had 63,783 page views during 5,807 visits from 3,624 unique visitors. Between October 1, 2009 and December 31, 2009, the Maximize Minnesota website had 2,997 page views during 756 visits from 428 unique visitors. MNCEME receives additional national exposure through the link to CareerMe, for which MNCEME is a regional center. CareerMe is part of the National Center for Manufacturing Education. Also, MNCEME has more than 400 followers on Twitter.

- **Advance IT.** From July 2009 through March 2010, the Advance IT website had 19,295 page views during 4,423 visits by 2,578 unique visitors. Between March 1, 2009 and March 1, 2010 the MnIT Careers website had 17,387 page views during 4,998 visits from 2,500 unique visitors.

- **HealthForce.** Over the 2009 calendar year, the HealthForce website had 7,143 visits from 4,316 unique visitors. The Scrubs camp page on the HealthForce website was viewed 3,210 times.

The available statistics are hard to combine, as they are from different service providers and for different time periods. However, making some conservative assumptions about overlap in visitors from related sites, we calculate that the annual number of visitors for all the Centers' sites combined is at least 24,000 unique individuals, or more than seven times as many as the students who graduate from Center-affiliated programs in a year. The numbers also appear to be growing as the sites become more established and the marketing efforts more mature.

Web presences of the Centers reflect differences in their environments and priorities. Both 360° and MNCEME are coordinating work to market the field of manufacturing with national efforts (Dream It. Do It. and CareerMe). In a field in which such coordinated efforts do not already exist, Advance IT has helped to form a new partnership for this purpose (Minnesota IT Careers) and developed its own career opportunities web site.

Reputational survey of industry leaders

In conducting the reputational survey, nearly one-third of the industry leaders in the list of intended respondents were found to be significantly engaged with one or more Centers. For findings about reputation, we restricted our analysis to the perceptions of only those 15 participants who did not have direct ties to any Center. The survey results are instructive.

Ninety-three percent of the respondents immediately recognized or identified one or more aspects of Center activities, and 87 percent were aware of the system-wide initiative to create industry-specific Centers of Excellence. While industry leaders were not uniformly knowledgeable about the activities in which Centers were engaged, taken together their responses suggest an encouraging view of the purpose and activities associated with Centers of Excellence. For example, when asked to describe what Centers of Excellence actually do, industry leaders said they…

- help organizations by supplying grants to support new, better, more efficient ways of training
- respond to industry in a way that is more nimble than the individual Minnesota State Colleges and Universities and the system office can respond
- help develop and align curriculum to help students transfer from one school to another
- bring in students interested in the industry and provide employers with highly skilled workers for that industry
- concentrate on developing a highly skilled workforce to address future workforce shortages

- coordinate curriculum between institutions
- help interest people and inform them about careers in manufacturing
- try to change the image of manufacturing
- offer new training options including online training
- provide hands-on learning experiences

A few industry association leaders felt that the Centers were not yet well recognized and could benefit from more outreach. One expressed frustration, saying that the Centers were "... more talk than action." Overall however, their comments indicate a growing reputation as a positive initiative, supporting visibility for manufacturing and technology, and providing advanced education and quality training opportunities.

In addition to these findings from industry leaders not directly involved in the Centers, the in-depth engagement of other industry and trade association leaders is itself evidence of the growing reach of the Centers. This level of involvement also shows that Centers' connections with the associations at the top levels in their fields have grown beyond mere awareness and into active participation. This is true for all four Centers.

Evidence of impact

The primary source of information about Center impacts is the survey of stakeholders. Results from the survey are summarized below in sections that correspond to each of the six core Center objectives. Where available, we also present evidence of impact from other sources.

1. Create new pathways for communication and collaboration among industry leaders, education and learners

Stakeholder survey results

Over 90 percent of stakeholders reported that the Center had "***helped to increase communication among colleagues in different programs or institutions,"*** including two-thirds of stakeholders who said it helped "a lot."

- Responses were about equally strong among all groups of stakeholders (faculty, administrators, industry partners, and K-12 partners).

- Responses were highest among 360° representatives (85% of whom reported "a lot" of impact) and HealthForce representatives (75% "a lot"), and lower among those at MNCEME (56%) and Advance IT (39%).

Examples they provided, and the impact on their organizations, include the following:

> It goes both ways. Industry is so much more aware of what is being offered. And MnSCU is more aware of our needs. Before HealthForce, I had never been asked about our needs. (HealthForce industry partner)
>
> There is a better understanding of how to align outcomes in courses with separate educational goals and a better understanding of the alignment of courses as related to articulation agreements. (Advance IT administrator)
>
> The regular deans meetings did not happen before MNCEME. Now they happen consistently, and have built a level of trust and cooperation which wouldn't exist otherwise. (MNCEME administrator)
>
> It's made faculty, staff, and administrators realize they are *not* [just] the regional centers – they can now deal with any place in the world. I've been able to place students at companies outstate – it will impact MN because a lot of what out-of-state companies are doing will come back to me – those companies have higher edge – they do come/look to MN because of our higher education. (360° faculty)
>
> Becoming aware of the programmatic offerings across all the collaboration [partner schools] helps us meet the needs of all our students. Without all those offerings, we wouldn't be able to help them all in directions they want to pursue. (360° administrator)
>
> From their conversations, I can tell that the academic leaders are definitely collaborating more than they were before. … It is *clear* there are closer partnerships, where there used to be only competition. They are much more cooperative now. (HealthForce industry partner)

More detailed follow-up questions were asked of respondents who identified general impacts related to communication and collaboration.

- Most (83%) of survey participants responding to this detailed portion of the survey reported that their Center involvement had put them in touch with new colleagues.

- Industry partners were asked whether or not Center related activities had introduced new ideas or resources to their firm or sector. All responded yes, and nearly 60 percent said this had happened "a lot."

- Similarly, faculty and administrators were asked if their Center involvement helped introduce new resources to their program or institution. Again, all responded yes, and two-thirds said this had happened "a lot."

- Finally, college and university administrators were asked about the extent to which Center work had helped to position their institution with key industry or related partners. All respondents said that it had, and more than one-third reported that this had happened "a lot."

Taken together, these results indicate a clear and consistent Center impact on communication among stakeholders.

2. Identify industry opportunities and innovations, and the workforce preparation they require

Stakeholder survey results

Over 90 percent of stakeholders reported that the Center helped ***"increase communication between educators and people in industry,"*** including 60 percent who reported it helped "a lot."

- Faculty gave slightly higher "yes" responses, and administrators slightly lower.

- A higher proportion of Advance IT respondents reported "a little" impact rather than "a lot" (33% "a lot"). The strongest responses were from HealthForce respondents (63% "a lot").

Examples of the evidence, and the impact of this increased communication, include the following:

> They have done a lot to open training programs to us. It used to be just telling us what they have to offer. Now they ask us what we need.
> (HealthForce industry partner)
>
> Educators are coming with more information now to industry functions and are much better equipped to ask appropriate questions to ascertain industry needs.
> (360° industry partner)
>
> At the beginning, there was disconnect between industry and education. Industry thought of us as necessary but not very relevant. Education saw industry as whiners. Now both see the other's competence and the challenges the other faces.
> (HealthForce faculty)

> The regular interaction between college leadership and the industry advisory board have made it obvious that those interactions are needed regularly, and that education representatives need to listen more than they speak. (MNCEME administrator)
>
> I see a deeper knowledge of IT transition and the impact on individual workers and how that gets people more quickly into better jobs. (Advance IT industry partner)

More detailed follow-up questions were asked of respondents who identified general impacts related to increased communication with and input from industry.

- In one set of follow-up questions, respondents were asked whether or not Center activities had caused educators to become more aware of current innovation or challenges in industry. Respondents to this question overwhelmingly (83%) reported that this was true.

- Similarly, more than four out of five faculty and administrators with knowledge of this topic reported that students were being better prepared for careers as a result of the Centers.

- Half of the industry partners reported that they had already seen evidence that center activity had strengthened their access to qualified employees, and an equal proportion indicated that Center activity had helped to upgrade the skills of current employees. These lower proportions reflect the fact that these outcomes take longer to develop.

3. Help learners of all ages discover and prepare for careers within Center focused industries

Stakeholder survey results

Over 90 percent of stakeholders reported that the Center ***"helped learners become more aware of careers in the field,"*** including 65 percent who reported it helped "a lot."

- Faculty and K-12 partners gave higher responses, and administrators and industry slightly lower.

- Responses were highest among 360° respondents (95% "a lot") and lowest among Advance IT (39% "a lot").

- The total percent of "yes" responses, combining "a lot" and "a little," was the same across all groups.

The following quotations from the interviews illustrate the kinds of evidence cited by respondents for increases in learners' preparation for careers:

> A lot comes from the web-site – internships and job opportunities are posted; students can go there any time. Also, there are opportunities for students to go to conferences where they can make connections and learn about job opportunities. (Advance IT administrator)
>
> MNCEME institutions are validating it [Project Lead the Way] with articulation agreements and put their money where their mouth is. Opportunity for admission is tangible from you to us. (MNCEME K-12 Project Lead the Way partner)
>
> That's an ongoing project – we work to make all aware of the opportunities and options, and the demand in manufacturing and health care. What 360° does, helps what we do. We want to keep people in the state, and create more alignment across the state. (360° industry partner)
>
> We work with high school students through PLTW. The training that teachers go through to teach PLTW increases instructors' knowledge in different career paths and industry (STEM). That knowledge carries over to the students. (MNCEME industry partner)
>
> IT college classroom visits and the marketing materials about careers. There are also visits to K-12 classrooms. (Advance IT industry partner)
>
> Students asking more questions, and they have talked to professionals in the field, have shadowing experience, have done plant tours...we have seen an increased number of students doing that. (360° administrator)

In addition, 89 percent of stakeholders reported that the Center ***"helped learners become better prepared for careers in the field,"*** including 61 percent who reported it helped "a lot."

- Again, faculty and K-12 partners gave the strongest responses (75% and 71% "a lot," respectively). Administrators (48% "a lot") were less positive than industry partners (65% "a lot").

- Responses were highest for 360° (75% "a lot") and HealthForce (71% "a lot"), and lower for Advance IT (50% "a lot") and MNCEME (44% "a lot").

Some of the respondents who reported a high level of impact relating to career identification and preparation in general were asked a series of follow-up questions about more specific changes and impacts that they had observed.

- All such respondents were asked if the work had led to more student interest in the field. All said that it had, and 61 percent said this had happened "a lot."

- Faculty, administrators, and K-12 educators were asked if Center-affiliated student engagement activities had resulted in students having a more realistic idea about careers in the field. All said yes, and nearly three-quarters said that this had happened "a lot."

- Finally industry partners were asked whether or not job applicants were better prepared as a result of the Centers, and whether or not job applicants had more realistic career expectations. All industry partners indicated that both of these outcomes had occurred. This included 58 percent who indicated it had happened "a lot" that applicants had come with more realistic career ideas, and 42 percent who reported it had happened "a lot" that job applicants were better prepared.

These results are encouraging, but also reflect the length of time required for Centers to be in operation before having a substantial impact on the preparation and expectations of job applicants – especially when the preparation work to create these outcomes begins in upper elementary school or middle school.

Impacts of support for Project Lead the Way (PLTW)

During February and March 2010, MNCEME staff surveyed all PLTW contacts in their database statewide to document the kinds of support they have received from MNCEME and what that support has meant to them. Responses were received from 206 individuals, including 127 teachers, 59 school administrators, and 22 others including counselors. These individuals, in school districts across the state, from north to south and from urban through suburban to rural, overwhelmingly praised the support they received from MNCEME through the PLTW coordinator: 50 percent rated it as "extremely effective" in meeting their needs, and 38 percent rated it "very effective." Support helped schools in several related ways, including:

- Implement PLTW (77%)

- Support PLTW (85%)

- Sustain and/or secure funding for PLTW (45%)

- Obtain certification for programs and/or teachers (60%)

- Training for teachers or counselors (64%)

Over half (53%) report that there would be major changes in their programs if this support were no longer available, and an additional 11 percent report that their programs would cease to exist without the support.

Representative comments about the impact of these services include:

> Our school has several incredible courses that would not be available to our students if not for PLTW/MNCEME. Every day nearly one hundred students are thrilled to go to a class they love. Over the course of the school year we have approximately 200 students involved in PLTW courses and we should have more every year for the next few years.
>
> PLTW has impacted the way I teach. Students engage in real-world applications and project-based learning, applying their problem-solving skills creatively in teams to approach engineering problems. MNCEME supports this by communicating opportunities for professional development and by serving as a resource for information.
>
> We have been able to start a viable program for students with the backing of the validation of Project Lead the Way and MNCEME. For years our students have received many of the skills that are a part of PLTW, but not with the high level of training, leadership, organization, and curriculum that PLTW and MNCEME provided.

4. Encourage cross-campus activity that strengthens learner opportunities and creates premiere course offerings

Stakeholder survey results

Three-quarters (75%) of respondents reported that the Center ***"helped to increase cross-campus cooperation to strengthen learning opportunities,"*** including 39 percent who reported that it helped "a lot."

- Respondents reporting this helped "a lot" were more common at 360° (55%) and HealthForce (50%), and less common at MNCEME (28%) and Advance IT (17%).

- K-12 partners were most likely to say that Centers had helped "a lot" in this area (3 of 4), followed by faculty (57%), industry partners (35%), and administrators (28%).

Over half (55%) of all faculty and administrators reported at least one example of cross-campus activity that was not in place prior to the Centers. These include:

- New shared positions (18%)

- New shared courses (15%) (most of the new shared courses are online or blended)

- New articulation agreements or memoranda of understanding for block transfer of credits (31%)

- Other new intercampus agreements, such as joint grants, interagency agreements for services, shared curriculum development, and shared research (16%)

Faculty and administrators cite many advantages that they have observed from the shared arrangements, including sharing scarce or expensive resources, networking with colleagues elsewhere in the system, less likelihood of having to cancel low-enrollment courses, enhanced ability to recruit talent, ability to create unique positions no single institution could afford to fund, increased access and completion opportunities for students, and more efficient services for businesses. They cite only a few disadvantages, including mainly the additional time required to coordinate shared positions or programs. However, respondents overwhelmingly reported that the advantages outweigh the disadvantages.

> Now we have students who can do the 2-year program at other campuses, or online, specifically, with little overhead on their part. (360° faculty representative)
>
> The sharing is a big deal, because a student can be in Thief River Falls and take the lecture or online portion of it from home. …When it's time to do the lab component, he can take his lab component at a partner school that's located closer to him, rather than driving all the way out to St. Cloud. (360° faculty)
>
> Individuals can pick the correct courses for their goals, rather than the ones offered locally, with no need to repeat courses. There is more cooperation between colleges. It helps get them the things they need, with no redundancy. (360° industry partner)
>
> At Metro State, there are two separate colleges, and they both have IT groups. These two groups are both present at meetings, and we talk and collaborate. This has the effect of strengthening learning opportunities for all. Also, this collaboration affects the process of how we do things in MnSCU, because it is more inclusive – the Deans meet together to share ideas. (Advance IT administrator)
>
> [The Center has] created the venue and forum for sharing projects, sharing successes, sharing best practices. That helps leverage successful projects that are being showcased, and leads to collaboration among other institutions. (HealthForce administrator)
>
> [The advantage is a] lack of redundancy, and very few gaps in the curriculum, because we talk a lot. (HealthForce faculty)

Benefits from cross-campus work are also perceived by those who are not currently partners. The advantages are attractive enough that several other institutions have asked to be allowed to join. During the last year, Lake Superior College has officially joined both 360° and HealthForce, and Inver Hills Community College has been added to HealthForce. Additionally, the four Centers collectively have also received requests from one university and four other colleges.

5. Champion changes in content and delivery of educational services that will meet the workforce needs of tomorrow

Stakeholder survey results

Three-quarters (75%) of respondents reported that the Center ***"contributed to changes in content or delivery of educational services,"*** including 36 percent who said it contributed "a lot."

- Responses were highest at HealthForce (54%), and lowest at MNCEME and Advance IT (22% each).

- K-12 and faculty representatives most often reported these changes (50% of each), with administrators less aware of them (36%) and industry least (30%).

Respondents provided substantial evidence of the Centers' contributions to innovation and responsiveness to changing needs. The following excerpts from surveys illustrate some of the ways in which Centers have done this:

> They listen to industry and students, and design solutions to needs – flexible, yet strategic. (360° industry partner)
>
> Listening to the voice of the customer – what do they want – schools will figure out pathways to help achieve the students' educational goals. (HealthForce industry partner)
>
> Instrumental in formation of engineering program that teaches engineering in a whole different way. It connects instructors with other innovative instructors. (MNCEME industry partner)
>
> There are an increased number of online courses. This improves access for students. And the modules expedite progress. (Advance IT administrator)

All respondents were also asked whether they could ***"name a process or product developed with the help of the Center that addresses an industry or workplace need better than before."*** Two-thirds (66%) of all respondents named such an innovation that the Center had helped create, citing examples including materials on career development,

camps and other programs to spark interest and motivation among school children, sophisticated health care simulations, a survey of business needs, applied research and consulting for industry, and new curriculum, courses, and entire programs.

Faculty and administrator respondents were also asked whether they could ***"name a process or product developed with the help of the Center that addresses an educational need better than before."*** An even higher proportion – 84 percent – named such innovations, which included articulation agreements and educational pathways, a learning assessment tool, novel delivery mechanisms for courses, new and strengthened curricula, internships, student competitions, and other activities for engaging students and enhancing their learning, informational materials to inform students and prospective students about educational opportunities, a program to support prospective entrepreneurs, and processes to coordinate previously disparate components.

Finally, respondents who indicated they were aware of innovations supported by the Centers were asked if they were aware of ***"any other programs, institutions, or organizations that have adopted a similar approach based on the Center's experience."*** One-quarter of respondents reported that they were aware of instances of the replication of Center-related innovations. The most commonly cited examples were wider use of new curriculum, the addition of new programs to existing shared courses, programs, or articulation agreements, and the wider use of outreach materials and programs. Some respondents were unable to cite specific examples. Nevertheless, the one-quarter figure is likely a low estimate of the actual extent of wider effects, since the most knowledgeable sources for such information would be those outside of the current Centers. Evidence of this was provided by a representative of a new Center partner institution, Lake Superior College, who was interviewed in this survey. (The institution joined both 360° and HealthForce; however, the interview was with an individual who was most familiar with HealthForce.) Asked about the institution's reasons for joining, the administrator replied:

> I know we were benefitting from things HealthForce was doing long before, just as I know programs all over within MnSCU are benefiting now from seeing what HealthForce is doing and learning from that, without having become part of HealthForce.

6. Produce revenue and leverage resources to power these objectives

Stakeholder survey results

Two-thirds (67%) of respondents reported that the Center ***"helped departments or programs acquire other funding or resources,"*** including 34 percent who said it helped "a lot."

- Respondents who reported that this had happened "a lot" were most common at 360° (45%) and MNCEME (40%), followed by HealthForce (33%) and Advance IT (17%).

Respondents were also asked whether departments or programs had been helped by the Center to ***"benefit from or leverage capacities or resources elsewhere in the system to strengthen your own work."*** (Industry representatives were asked whether the Center had ***"helped MnSCU schools or their programs to partner with or leverage capacities elsewhere in the system to strengthen their work or serve industry better."***) As in the first question, two-thirds (67%) reported such help, including 34 percent who reported "a lot" of help.

Respondents described these benefits in the following ways:

> Meeting with others, seeing what they do, being able to bring those things to your campus. Making changes in what we do. I toured other campuses, came back, and said we are antiquated, and we got working on changing things here. (360° administrator)
>
> MnSCU institutions working with our foundation, DEED, regional economic development, and with industry itself. (360° industry partner)
>
> One example is Alexandria Technical College. They're spreading the word and getting people involved in more industry-related studies. Those are types of examples where it's catching ... you think other schools would walk away saying, "hey, we should do things like that." (MNCEME industry partner)
>
> Regional conversations allow for leveraging and cooperation among individual campuses that we would otherwise not have access to. (HealthForce faculty)
>
> We've been able to apply for other grants because of our expertise in IT. For example, submitting proposals for STEM summits, or for initiatives through the larger MnSCU system. (Advance IT administrator)

Respondents who reported "access to other funding or resources" were asked to provide examples. Many of the examples they gave were of accessing Center funds, not of leveraging the Center to access *additional* resources. However, in the follow-up questions of 11 respondents who indicated outcomes related to leveraging resources, it was clear that their association with the Center had helped some of them to access additional funds. About half of the group had submitted proposals for outside funding in which they proposed to work together with Center partners, and about one-third of the group had received grants based at least in part on that connection. In addition, about half had submitted proposals for outside funds in which they had mentioned their connection to the Center as part of the justification for their qualifications or capacity to do the work. One-third of the group (4 of the 11 responding to these follow-up questions) had received such grants. MNCEME and Advance IT faculty and administrators were the most likely to report having submitted or received such grants.

There are also several comments from respondents citing increases in less tangible resources for their institutions and programs, such as reputation and credibility. Attendant on such gains are more tangible impacts, including gains in student enrollment and improved ability to recruit faculty. There are also several comments specifically citing the value added by the Centers through their function as conveners, to leverage existing resources by bringing them together.

> It has helped this college attain more of the market share, because as people saw what the collaboration is, there is a new perceived value to attending our college as part of the Center rather than a stand alone college. The reputation of the Center is growing and is helping the reputations of the individual colleges by being associated with a reputable Center. (360° administrator)
>
> The Center helped us provide a third-party service/entity to bring resources together – we couldn't do it by ourselves. (Advance IT administrator)
>
> It's nice to have a central group that represents the system. The joining of HEIP [the former Healthcare Education-Industry Partnership] and HealthForce, that brings the best of them together. It's kind of a one-stop-shopping. It's better for the colleges to have one place to go to. For example, they [HealthForce] watch for grant opportunities for people to participate in. (HealthForce industry partner)
>
> Just being part of MNCEME and its name recognition helps to open doors with business, and when looking at grant monies. (MNCEME administrator)

Additional funds leveraged by the Centers

Data shared by the Centers with Wilder Research show the amount of additional funding received or leveraged by the Centers. These do not include the Center's allocation from the Board of Trustees for the year. The amounts shown in Figure 6 below reflect funds received during the year that were either entirely for the direct benefit or use of the Center, or were leveraged for a department or program because of its association with the Center.

The total amount of funding reported for 2008-09 is just over $9.7 million for the four Centers combined. Data collected for the 2006-2009 evaluation reports showed a total of just over $15.6 million leveraged by the four Centers over that three-year period. This year's figures thus represent a substantial increase from the prior annual average, and is also substantially larger than in any previous year.

There are many possible contributing reasons for this growth in funding. One is the increased maturity and credibility of the Centers as grantees and partners, based on their initial three years of work. Another factor that may have contributed to some part of the increase is the availability of federal economic stimulus funds. The large increase in funds from private sources in 2009 includes a multi-million dollar contribution for

MNCEME's work on the development of the Bachelor of Science in Engineering program on the Iron Range.

6. Leveraged funds, 2008-2009, by type of source and year

	2006	2007	2008	2009
Office of the Chancellor special projects funds (e.g. online courses)	$860,490	$761,000	$424,486	$163,604
Other MnSCU colleges and universities	$859,623	$84,525	$568,856	$1,196,672
Local (school, city, county)	$5,000	$91,600	$306,065	$321,364
Other state agencies (e.g., MnDOT, Job Skills Partnership)	$1,968,731	$549,283	$417,050	$2,551,095
Federal	$2,303,373	$0	$1,695,043	$2,514,073
Public sources, sub-total	$5,997,217	$1,486,408	$3,411,500	$6,746,808
Private sources, combined	$794,908	$2,122,850	$1,827,114	$3,756,115
Total amount	$6,792,125	$3,609,258	$5,238,614	$10,502,924

Source: *Data provided by Centers, with calculations by Wilder Research. Private sources include private corporations, industry associations, corporate foundations, and other foundations.*

Figure 7 below subdivides the amounts shown in Figure 6, to show the proportion of funds brought in to support the work of associated departments and programs and those more directly supporting Center operations. The proportion varies considerably among the Centers. Overall, the number of dollars coming through Center budgets decreased by $100,000 from the 2008 level, which is a small fraction of the total amount. In 2008, funds received by the Centers themselves were 15 percent of the total leveraged funds. This proportion dropped to 6 percent in 2009 not because of this small drop in absolute dollars, but primarily because the total value of non-Center leveraged funds grew by a very substantial amount.

The Centers' ability to raise funds specifically to support their own operations is constrained by their "virtual" status, which requires them to have a fiscal agent for any such funds. Without an official status that gives them standing to receive and manage funds independently, it may be difficult for Centers to significantly increase their level of self-support.

7. Leveraged and matched funds received in 2009, by Center and whether funds flow through Center budgets or not

	Overall leveraged funding		360°	MnCEME	AdIT	Health Force	TOTAL
Public sources of funding	Office of the Chancellor special projects funds	Center			129,804	33,800	163,604
		Non-Center					
		Total			$129,804	$33,800	$163,604
	Other MnSCU colleges and universities	Center					
		Non-Center	717,211			479,461	1,196,672
		Total	$717,211			$479,461	$1,196,672
	Local (school, city, county)	Center					
		Non-Center				321,364	321,364
		Total				$321,364	$321,364
	Other (non-MnSCU) state agencies	Center	202,000		50,000		252,000
		Non-Center	863,926	1,420,329		14,840	2,299,095
		Total	$1,065,926	$1,420,329	$50,000	$14,840	$2,551,095
	Federal	Center	161,404		5,000		166,404
		Non-Center	134,669	1,900,000	313,000		2,347,669
		Total	296,073	$1,900,000	$318,000		$2,514,073
	Total from public sources	***Center***	**363,404**		**184,804**	**33,800**	**582,008**
		Non-Center	**1,715,806**	**3,320,329**	**313,000**	**815,665**	**6,164,800**
		Total	**$2,079,210**	**$3,320,329**	**$497,804**	**$849,465**	**$6,746,808**
Private funding	Scholarships or sponsorship (e.g. camps or seminars)	Center					
		Non-Center	25,272	10,000	175,500		210,772
		Total	$25,272	$10,000	$175,500		$210,772
	In-kind donations or equipment	Center					
		Non-Center	8,000	698,837			706,837
		Total	$8,000	$698,837			$706,837
	Other grants, contracts, or funding	Center	15,000				15,000
		Non-Center	3,000	2,500,000		320,506	2,823,506
		Total	$18,000	$2,500,000		$320,506	$2,838,506
	Total from private sources	***Center***	**15,000**				**15,000**
		Non-Center	**36,272**	**3,208,837**	**175,500**	**320,506**	**3,741,115**
		Total	**$51,272**	**$3,208,837**	**$175,500**	**$320,506**	**$3,756,115**
Total		**Center**	**378,404**	**0**	**184,804**	**33,800**	**597,008**
		Non-Center	**1,752,078**	**6,529,166**	**488,500**	**1,136,172**	**9,905,916**
		Total	**$2,130,482**	**$6,529,166**	**$673,304**	**$1,169,972**	**$10,502,924**
		Center%	**18%**	**0%**	**27%**	**3%**	**6%**
		Non-C%	**82%**	**100%**	**73%**	**97%**	**94%**

Source: *Data provided by Centers, with calculations by Wilder Research.*

Summary of impacts

The tables on the following pages summarize the responses to the broadest questions about impacts for each of the six Center objectives. In Figure 8 these are grouped by Center, and in Figure 9 they are grouped by the type of respondent.

It is important to recall that not all impacts are reflected in these survey findings. For example, most administrators and faculty members – even those most involved in the activities of the Centers – are not aware of the impact of Project Lead the Way on the career awareness or level of preparation of middle school and high school students. The responses shown here only reflect respondents' assessments of the impact of those activities with which they are themselves the most directly involved. In this respect, it is a somewhat conservative estimate of impact.

Not surprisingly, objectives 1 through 3 show the greatest evidence of impact by the Centers of Excellence. These three objectives represent initial steps that help to lay the groundwork for the latter three. Impacts seen in these objects are leading indicators for potential longer-term impacts in the other objectives.

Within specific objectives, there are some notable differences in ratings among different stakeholder groups. For example, 79 percent of faculty report "a lot" of impact in helping learners become more aware of careers in the field (row 3a), compared to 60 percent of administrators and 59 percent of industry. Given the closer contact that faculty have with learners, it is likely that the different ratings reflect different levels of awareness, combined with caution not to over-estimate impact on the part of administrators and industry representatives. It is also possible that faculty are reporting about change in one group of students – those they see on a regular basis – while the other groups are thinking of a larger pool of learners (such as all students in a program, for administrators, or all job applicants, for industry representatives).

Differences among Centers reflect an assortment of influences. In addition to specific Center strategies and activities, such influences also include differences in the structures and needs of the industry sectors they serve, as well as in the history and current capacities of the institutions and programs that are included in the Centers. It is likely that Advance IT's lower impact in cross-campus cooperation for learning opportunities (row 4) is related to its smaller number of institutional partners, and its lower impact in increasing communication between industry and education (row 2) is related to the more fragmented structure of the industry sector. Also, as previously mentioned, MNCEME's lower ratings for helping learners become better prepared for careers in the field (row 3b) reflects a small number of stakeholders who are familiar with the impacts of Project Lead the Way.

8. Overview of findings, by objective and Center

Objective	360° N=20		MNCEME N=18		Advance IT N=18		HealthForce N=24		Total N=80	
	N	%	N	%	N	%	N	%	N	%
1. Helped increase communication among colleagues in different programs or institutions	**19**	**95%**	**17**	**94%**	**15**	**83%**	**22**	**92%**	**73**	**91%**
A lot	*17*	*85%*	*10*	*56%*	*7*	*39%*	*18*	*75%*	*5*	*65%*
A little	*2*	*10%*	*7*	*39%*	*8*	*44%*	*4*	*17%*	*21*	*26%*
2. Increased communication between educators and people in industry	**20**	**100%**	**15**	**83%**	**17**	**94%**	**24**	**100%**	**76**	**95%**
A lot	*13*	*65%*	*12*	*67%*	*6*	*33%*	*17*	*71%*	*48*	*60%*
A little	*7*	*35%*	*3*	*17%*	*11*	*61%*	*7*	*29%*	*28*	*35%*
3a. Helped learners become more aware of careers in the field	**20**	**100%**	**17**	**94%**	**15**	**83%**	**24**	**100%**	**76**	**95%**
A lot	*19*	*95%*	*10*	*56%*	*7*	*39%*	*16*	*67%*	*52*	*65%*
A little	*1*	*5%*	*7*	*39%*	*8*	*44%*	*8*	*33%*	*24*	*30%*
3b. Helped learners become better prepared for careers in the field	**18**	**90%**	**17**	**94%**	**14**	**78%**	**22**	**92%**	**71**	**89%**
A lot	*15*	*75%*	*8*	*44%*	*9*	*50%*	*17*	*71%*	*49*	*61%*
A little	*3*	*15%*	*9*	*50%*	*5*	*28%*	*5*	*21%*	*22*	*28%*
4. Helped to increase cross-campus cooperation to strengthen learning opportunities	**14**	**70%**	**17**	**94%**	**10**	**56%**	**19**	**79%**	**60**	**75%**
A lot	*11*	*55%*	*5*	*28%*	*3*	*17%*	*12*	*50%*	*31*	*39%*
A little	*3*	*15%*	*12*	*67%*	*7*	*39%*	*7*	*29%*	*29*	*36%*
5. Contributed to changes in content or delivery of educational services	**15**	**75%**	**14**	**78%**	**12**	**67%**	**19**	**79%**	**60**	**75%**
A lot	*8*	*40%*	*4*	*22%*	*4*	*22%*	*13*	*54%*	*29*	*36%*
A little	*7*	*35%*	*10*	*56%*	*8*	*44%*	*6*	*25%*	*31*	*39%*
6a. Helped departments or programs acquire other funding or resources	**14**	**70%**	**14**	**78%**	**7**	**39%**	**18**	**75%**	**53**	**66%**
A lot	*9*	*45%*	*7*	*39%*	*3*	*17%*	*8*	*33%*	*27*	*34%*
A little	*5*	*25%*	*7*	*39%*	*4*	*22%*	*10*	*42%*	*26*	*33%*
6b. Benefited from or leveraged capacities or resources elsewhere in the system to strengthen your own work	**11**	**55%**	**13**	**72%**	**10**	**56%**	**19**	**79%**	**53**	**66%**
A lot	*8*	*40%*	*5*	*28%*	*4*	*22%*	*10*	*42%*	*27*	*34%*
A little	*3*	*15%*	*8*	*44%*	*6*	*33%*	*9*	*38%*	*26*	*33%*

9. Overview of findings, by objective and respondent group*

Objective	Faculty N=14		Administrators N=25		Industry N=37		Total* N=76	
	N	%	N	%	N	%	N	%
1. Helped increase communication among colleagues in different programs or institutions	**13**	**93%**	**23**	**92%**	**33**	**89%**	**69**	**91%**
A lot	*8*	*57%*	*17*	*68%*	*24*	*65%*	*49*	*64%*
A little	*5*	*36%*	*6*	*24%*	*9*	*24%*	*20*	*26%*
2. Increased communication between educators and people in industry	**14**	**100%**	**22**	**88%**	**36**	**97%**	**72**	**95%**
A lot	*9*	*64%*	*13*	*52%*	*22*	*59%*	*44*	*58%*
A little	*5*	*36%*	*9*	*36%*	*14*	*38%*	*28*	*37%*
3a. Helped learners become more aware of careers in the field	**13**	**93%**	**24**	**96%**	**35**	**95%**	**72**	**95%**
A lot	*11*	*79%*	*15*	*60%*	*22*	*59%*	*48*	*63%*
A little	*2*	*14%*	*9*	*36%*	*13*	*35%*	*24*	*32%*
3b. Helped learners become better prepared for careers in the field	**13**	**93%**	**23**	**92%**	**31**	**84%**	**67**	**88%**
A lot	*10*	*71%*	*12*	*48%*	*24*	*65%*	*46*	*61%*
A little	*3*	*21%*	*11*	*44%*	*7*	*19%*	*21*	*28%*
4. Helped to increase cross-campus cooperation to strengthen learning opportunities	**12**	**86%**	**22**	**88%**	**23**	**62%**	**57**	**75%**
A lot	*8*	*57%*	*7*	*28%*	*13*	*35%*	*28*	*37%*
A little	*4*	*29%*	*15*	*60%*	*10*	*27%*	*29*	*38%*
5. Contributed to changes in content or delivery of educational services	**12**	**86%**	**20**	**80%**	**25**	**68%**	**57**	**75%**
A lot	*7*	*50%*	*9*	*36%*	*11*	*30%*	*27*	*36%*
A little	*5*	*36%*	*11*	*44%*	*14*	*38%*	*30*	*39%*
6a. Helped departments or programs acquire other funding or resources	**11**	**79%**	**19**	**76%**	**19**	**51%**	**49**	**64%**
A lot	*5*	*36%*	*8*	*32%*	*10*	*27%*	*23*	*30%*
A little	*6*	*43%*	*11*	*44%*	*9*	*24%*	*26*	*34%*
6b. Benefited from or leveraged capacities or resources elsewhere in the system to strengthen your own work	**10**	**71%**	**19**	**76%**	**21**	**57%**	**50**	**66%**
A lot	*4*	*29%*	*10*	*40%*	*10*	*27%*	*24*	*32%*
A little	*6*	*43%*	*9*	*36%*	*11*	*30%*	*26*	*34%*

***Note:** Due to the small number, the four K-12 respondents are not included in this table.*

Accomplishments made possible by the Centers

Some stakeholders in the survey occasionally volunteered observations that certain things "would not have happened" or "could not have been done" without the Centers. Respondents who made such statements included all four of the K-12 respondents, 9 of the 14 faculty, 5 of the 25 administrators, and 1 industry representative. This represents 21 percent of all the stakeholders who were surveyed. Among only the non-industry representatives, it includes 42 percent of the total.

Respondents did not claim that all the impacts they described were solely because of the Centers. Rather, certain specific changes, in the following categories, were said to have resulted only because of the Centers' involvement:

- Improved student learning and training (8 respondents)
- Increased outreach and career awareness, and improved STEM preparation, among pre-college students (7 respondents)
- Development of career pathways and improved cross-campus coordination and access to programs (5 respondents)
- Improved use of existing resources and access to additional resources and support (5 respondents)
- Development of new courses and programs, and sharing of best practices (4 respondents)
- A unified system "voice" speaking to the industry sector (1 respondent)

Respondents credit the following contributions of the Centers with making these outcomes possible:

- Funds (10 respondents)
- Convening and facilitation to bring people together (literally or metaphorically) across campuses and promote sharing and coordination (9 respondents)
- Coordinated outreach and marketing (5 respondents) and other specific activities (2 respondents)

In contrast, three respondents – two administrators and one faculty member – commented that they did not believe the Centers had made a difference in accomplishments. Describing new program development and general curriculum and equipment updates, these stakeholders felt that the same results could have been obtained had their own institutions had the same amount of money.

Discussion and conclusions

The Centers are showing a level of impact consistent with the time they have had to develop

The Centers provide a unique capacity in the system for meeting an interrelated set of six important goals. They provide added value to support system innovation and responsiveness to flagship economic sectors in the state. In each of the six objectives, we find strong evidence that they are creating impact. Based on many evaluations of comparable organizations, we find that the level of impact observed is consistent with what can reasonably be expected of multi-partner, multi-sector collaborations after four to five years of development.

In meeting these six objectives, Centers are also advancing the priorities of the overall system's current strategic plan.

- Through help for diverse learners to discover and prepare for careers, and creating new pathways for communication with learners, they are **increasing access, opportunity, and success for students**.
- By championing changes in content and delivery, including cross-campus coordination to strengthen courses and programs, they are **promoting high quality programs and services** and **strengthening the system's commitment to excellence and accountability.**
- By identifying industry opportunities and the workforce preparation these require – and championing the courses and programs needed to meet them – they are **enhancing the state's economic competitiveness.**
- With the new communication pathways they have developed and are strengthening, as well as promoting changes in the content and delivery of educational services, they are spearheading **innovation to meet current and future educational needs**.
- Finally, by leveraging their system funds to secure additional revenue, and leveraging existing capacities for greater coordination and impact, they are helping to advance the new goal currently under consideration of **enhancing the long-term viability** of public higher education.

Centers are adapting with different strengths to meet different situations and priorities

From the outset, the Centers were designed with differences that fit unique industry sector needs and institutional capacities. The same considerations continue to shape varying developmental paths. For example, we see more new program development in the two Centers (360° and HealthForce) that have more academic partners. By contrast, at MNCEME, the host institution's four-year programs have national accreditation whose standards limit transferability of some first- and second-year credits. However, this Center has focused the most on strengthening pre-college STEM training that can articulate into the front end of either two-year or four-year programs.

Another factor that influences Center activities and options is the nature of the industry sector it serves. Advance IT works in a sector that itself serves a wide range of industries as well as nonprofits and government agencies. This sector began with the least well-developed industry associations. This Center, fittingly, has put the most effort into developing and convening industry networks and developing supports for Center alumni.

We would not expect equal successes across the board. By its nature, innovation presumes a readiness to embrace some less successful efforts as the price of discovering better methods. Both kinds of results produce valuable learning.

The Centers' position within the overall system still needs fine-tuning

The Centers are currently held accountable to create innovation within the system. However, as "virtual centers" that do not enroll students or offer courses or programs of study, they have no authority to make the changes necessary for that innovation to occur. The Centers have been tasked to encourage cooperation in a basically competitive environment, and encouraged to develop new rules of engagement while existing policies and incentives still stand. These include institutional funding and oversight that encourage competition by basing funding on the number of students served, and that create disincentives for more technical (and hence expensive) fields of study by basing per-student funding at the same rate for all. It will be important to consider options to better align institutional and Center incentives, and give Centers more tools for creating and measuring the changes they are expected to produce.

In their current configuration, Centers are promoting ways of doing business that do not necessarily fit with current institutional practices. This is one likely reason why administrators gave Centers lower ratings than did faculty on performance of some objectives – and sometimes also lower than industry partners. The work to improve the

alignment of curriculum and develop new programs, for example, is time-consuming, often requires considerable added administrative effort, and may not – especially not yet – show a corresponding benefit at the institutional level. Faculty, however, have a more direct view of the gains in student access, learning, and career readiness, and industry stakeholders are in a position to reap the most significant benefits when the additional and better-prepared students complete their programs.

The role of administrators, however, is vital to the success and growth of the Centers. The accomplishments we observe to date are evidence of their considerable willingness to discern, and work for, the larger good. To help extend a similar level of collaboration beyond the initial circle of Center supporters, the overall system should provide structures and processes to support and sustain this kind of collaboration.

Future considerations

The level of impact observed to date leads to a conclusion that continued funding of the Centers is merited. The same amount of money, spread among institutions rather than focused through the Centers, would be unlikely to achieve the same goals. The Centers add value by focusing funds on common purposes. They also add to the impact of the funds through their convening and facilitation to craft a shared work plan and help the partners maintain their accountability to each other for working together. Additional decision-making authority or system incentives to back up these purposes should be considered.

Given the current challenges inherent in Centers' structure, the system should not assume that the current configuration of the Centers is the best for the long term. Different options should be considered. Is it necessary to identify a single lead institution? If so, should there be limits on the kind of institution that is so designated? Could more than one university be included? Should the unit of affiliation continue to be entire institutions, or could individual programs be considered Center partners? The system will be best served if a wide variety of options are considered.

Appendix

1. Detail of follow-up responses for Objectives 1, 2, and 3

2. Key activities, by Center, showing areas of impact

1. Detail of follow-up responses for Objectives 1, 2, and 3

The figures below show the detailed numbers and percentages for the follow-up questions mentioned in the Findings section for Objectives 1, 2, and 3.

A1. Detail of follow-up question responses for Objective 1

	Group(s) responding	Number of respondents	Responses
Has [this activity] introduced new ideas or new resources to your firm or sector?	Industry partners	12	58% "Yes, a lot" 42% "Yes, a little"
Has it introduced new ideas to the program or institution?	Faculty and administrators	11	64% "Yes, a lot" 14% "Yes, a little"
Has it introduced new resources to the program or institution?	Faculty and administrators	11	74% "Yes, a lot" 26% "Yes, a little"
Has [this activity] put you in touch with new colleagues?	All groups	23	83% "Yes"
Has the work positioned the institution well with any key industry or other partners?	Administrators	7	3 "Yes, a lot" 4 "Yes, a little"

A2. Detail of follow-up question responses for Objective 2

	Group(s) responding	Number of respondents	Responses
As a result of [activity], have educators become more aware of current innovation or challenges in industry?	All groups	23	83% said "Yes"
Are students in the program being better prepared for careers?	Faculty and administrators	7	6 said "Yes, a lot"
Has [activity] strengthened your access to qualified employees?	Industry partners	8	2 said "Yes, a lot" 2 said "Yes, a little"
Has [activity] helped you upgrade the skills of current employees?	Industry partners	8	2 said "Yes, a lot" 2 said "Yes, a little"

A3. Detail of follow-up question responses for Objective 3

	Group(s) responding	Number of respondents	Responses
More students/potential job applicants are interested in careers in the field (a)	All groups	27	61% "Yes, a lot" 22% "Yes, a little"
Job applicants are better prepared (b)	Industry partners	12	42% "Yes, a lot" 33% "Yes, a little"
Job applicants have more realistic career ideas (b)	Industry partners	12	58% "Yes, a lot" 25% "Yes, a little"
Students have more realistic ideas about careers in the field (b)	K-12, faculty, administrators	15	73% "Yes, a lot" 20% "Yes, a little"

Notes: **(a) Students or potential job applicants interested in the field:** *Responses were highest among MNCEME representatives (75% "a lot") and lowest among Advance IT respondents (25% "a lot").*

(b) Job applicants or students better prepared, more realistic: *Responses were most consistently high among Advance IT representatives (percentages cannot be given due to small numbers)*

2. Key activities, by Center, showing areas of impact

Based on Center documents and interviews with Center directors, Wilder Research identified 8 to 12 activities of each Center that reflect the most significant investment of energy and resources and are most likely to contribute to accomplishing the objectives of the Centers. These are listed in Figures A4 through A7 below.

Based on stakeholder feedback, interviews with directors, and prior evaluations, the link between each activity and its associated impacts is represented in the chart. A solid circle in a given column indicates a large or very likely impact related to that column's objective or system priority. An open circle represents a moderate or possible impact. A blank in a column indicates that no impact, or only minimal impact, has been observed in this area so far.

The Center objectives, discussed in the introduction above, are the areas of activity in which Centers uniquely add value to the system. The numbering corresponds to the list below:

1. Create new pathways for communication and collaboration
2. Identify industry opportunities and innovations, and the workforce preparation they require
3. Help learners of all ages discover and prepare for careers
4. Encourage cross-campus activity that strengthens opportunities and creates premiere course offerings
5. Champion changes in content and delivery of educational services
6. Produce revenue and leverage resources to power these objectives

The columns for system priorities (also discussed in the introduction) correspond to the numbering in the following list:

1. Increase access and opportunity
2. Ensure high-quality learning programs and services
3. Provide programs and services that enhance …economic competitiveness …
4. Innovate to meet current and future educational needs

A4. Key activities of the 360° Center, 2009–2010

	Impact on goal areas									
	Center of Excellence objectives						System priorities			
	1	2	3	4	5	6	1	2	3	4
A. Outreach work to do public marketing and communications through the Center's web site, Facebook ads, and LinkedIn for the purpose of promoting the manufacturing industry and manufacturing and engineering careers and recruiting students into 360º affiliated programs.			●	●			●		●	
B. Outreach efforts through camps for K-12 students, career fairs, and connections to teachers, counselors, and secondary school administrators	●		●			●	●		●	
C. Financial support to partner institutions, which helped support summer camps, equipment, and the needs of programs in regions around the state	●	●	●	●	●	●	●	●	●	●
D. Development of new online certificates, called "Distance 360" programs. These certificates are designed as building blocks within the 360º Seamless Career Pathway.	●	●	●	●	●	●	●	●	●	●
E. The "IDEA competition" for potential entrepreneurs, in partnership with the Northwest Minnesota Ingenuity Frontier	○	●				●			●	
F. Partnership in the Regional Economic Alliance, now called Impact 20/20, also in partnership with the Northwest Minnesota Ingenuity Frontier	○	○	●		○	○		○	○	○
G. Assisting Anoka Ramsey Community College with the development of an Associate of Science program in Applied Engineering with a biomedical focus, with the option to complete the bachelor's degree at Bemidji State University	○	○		○	○	○		○	○	○
H. Helping to launch the Institute of Technological Entrepreneurship & Innovation at Bemidji State	○	○	○			○		○	○	○
I. Coordination and financial support for the West Central Minnesota Dream It. Do It. Campaign	●	○	●	○	○	●	●	○	●	○
J. The Center Director's participation as a board member of the Great Lakes Manufacturing Council	●	●			○				○	

KEY to impact

Based on stakeholder feedback, director interviews, and prior evaluations

	Minimal/not observed yet
○	Some/possible
●	Large/very likely

A5. Key activities of MNCEME, 2009–2010

	Impact on goal areas									
	Center of Excellence objectives						System priorities			
	1	2	3	4	5	6	1	2	3	4
A. Support for a new Bachelor of Science in Engineering program on the Iron Range	●	●		●	●	○	●	●	●	●
B. "Maximize Minnesota" events on energy management for business and industry	●	●	○	○					○	●
C. RFP process for funding projects in partner schools to support cross-campus and extended learning activities	●	●	●	●	●	●	●	●	●	●
D. Increase public visibility for manufacturing and engineering through the functionality of the new web site: social networking, updates, etc.	●		●			○	●			
E. Frequent Deans and Advisory Board meetings to facilitate communication between and among groups	●	●		●	●				○	●
F. Membership in regional and national manufacturing associations to influence manufacturing policy, perception, and promotion	●	●			●				●	
G. Active staff outreach and support for Project Lead the Way	●		●	●	●	●	●	●	●	○
H. Efforts to stimulate STEM interest through ZAP camps, Rube Goldberg competitions, presence at the State Fair, etc.	○		●			●	●		●	
I. Promotion of career awareness, including *Measures of Success* magazine, and an online e-zine	●	●	●			●	○	●		

KEY to impact

Based on stakeholder feedback, director interviews, and prior evaluations

	Minimal/not observed yet
○	Some/possible
●	Large/very likely

A6. Key activities of Advance IT, 2009–2010

	Impact on goal areas									
	Center of Excellence objectives						System priorities			
	1	2	3	4	5	6	1	2	3	4
A. Advance IT's work to found, sponsor, and participate in ongoing activities of the Minnesota IT Workforce Collaborative, a partnership project with DEED and the Minnesota High Tech Association to identify and meet the needs of the Minnesota IT labor market	●	●		○	○	○			●	○
B. Host, plan, and manage the Secure360 conference as one of four organizational members of the Upper Midwest Security Alliance	●	●			○	●			●	
C. A comprehensive IT career awareness and success program that includes online resources through Minnesota IT Careers and several campus-based events at Metro Area campuses	●	○	●	●	●	●	●	●	●	●
D. Support for new course creation, updating of course curriculum, and conversion to online delivery for content in IP telephony, risk management, network security, open source technology, forensics, and information management	●	●		●	●	●	○	●	●	●
E. Programs for outreach to secondary students that promote career awareness and interest, as well as introductory-level courses offered during non-school hours that promote college readiness and in some cases college credit.	○	○	●	●	●	○	●	●	○	
F. Career advancement and continuing education for MnSCU IT alumni			●	●		○	●		●	
G. Continuing professional education in security-related topics for public and private sector employees	○	○	○			○	●	○	○	
H. The Minnesota-Wisconsin competition of the National Collegiate Cyber Defense Competition	●	●	●	●	○	○	○	●	●	

KEY to impact

Based on stakeholder feedback, director interviews, and prior evaluations

	Minimal/not observed yet
○	Some/possible
●	Large/very likely

A7. Key activities of HealthForce, 2009–2010

	Impact on goal areas									
	Center of Excellence objectives						System priorities			
	1	2	3	4	5	6	1	2	3	4
A. Center structure to promote communication and collaboration in place of prior competition (institutions and industry partners)	●	●	●			●	○	●	●	●
B. Fund innovations statewide through the RFP process (also leverages system resources not previously activated)	●	●	●	●	●	●	○	●	○	●
C. Staff support for targeted initiatives [e.g. outreach]	●	●	●		○		●		●	●
D. Scrubs Camp and other career awareness and preparation activities	●	○	●				●	●		○
E. Center-funded activities to strengthen recruitment and retention of a diverse workforce			●			●	●			
F. Center-funded activities to promote advancement opportunities for incumbent workforce		○	●	○	○			●	●	
G. Center support for new curricula and programs, including simulations and the Medical Assistant program	●	●	●	●	●	○	●	●	●	●
H. Regional Incentives grants to help identify workforce needs and coordinate responses within specific regions	●	●			○	○			●	○
I. Moving Experience Forward grants to foster replication and expansion of best practices developed through earlier Center funding	○	○	○	●	●	○	○	●	●	○
J. The Center's participation in the Coalition for Continuous Improvement in Healthcare	●	●		○	●			●	●	●
K. Support for the cross-campus Doctorate of Nursing Practice program	●			●	●	○	●	●	○	●
L. Support for DOL proposal and grant implementation to build clinical lab workforce	○	●		●	●	●	○	●	●	●

KEY to impact

Based on stakeholder feedback, director interviews, and prior evaluations

	Minimal/not observed yet
○	Some/possible
●	Large/very likely