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Study of Student Demand and Employer Needs for Higher Education in the Mesabi Range Region

Sponsored by:

- Range Association of Municipalities and Schools (RAMS)
- University of Minnesota Duluth (UMD)
- Minnesota State Colleges and Universities (MNSCU)

Conducted by:

DMD Consulting and Praxis Strategy Group

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Table of Contents

Tables

Graphs

Appendices

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INTRODUCTION

The 2007 Minnesota legislature provided authorizing legislation and funding for a study of student demand and employer needs for higher education in the Mesabi Range Region of Northeastern Minnesota. The impetus for this study was the recognition by the region's legislators and community, industry and educational leaders that the area was poised to undergo dramatic changes as a result of new economic opportunities highlighted by the Minnesota Steel project near Nashwauk in Itasca County. These economic opportunities have the potential to impact all aspects of life in the Region. The Mesabi Range Region of northeastern Minnesota includes the cities of Grand Rapids east to Eveleth and north to Ely.

Under a contract with Minnesota State Colleges and Universities, the study was conducted as a collaboration among Minnesota State Colleges and Universities, the Board of Regents of the University of Minnesota, the University of Minnesota Duluth, and the Range Association of Municipalities and Schools, which acts as the lead agency in coordinating the study. Following is a description of these entities:

Minnesota State Colleges and Universities (MNSCU) is the seventh-largest system of higher education in the United States. It is comprised of 32 two-year and four-year state colleges and universities with 53 campuses located in 46 Minnesota communities. The System serves approximately 240,000 students annually in credit-based courses, an additional 130,000 students in non-credit courses, and produces 32,000 graduates each year.

The University of Minnesota Duluth (UMD) is a comprehensive regional university enrolling over 11,000 graduate and undergraduate students. UMD's Natural Resources Research Institute encourages economic growth for Minnesota's natural resources-based industries while keeping watch over impacts on the environment.

The **Range Association of Municipalities and Schools (RAMS)** is an association which develops approaches to problems common to areas of northeast Minnesota affected by operations involved in mining iron ore and taconite. RAMS promotes the general welfare and economic development of the cities, towns, and school districts within the Iron Range area of northeast Minnesota.

This project has involved systematic research to learn the extent to which there is student demand and employer need justifying expanded higher education offerings, specifically four-year programs and graduate programs in STEM-related areas and healthcare, in the Mesabi Range Region. Essentially, it would be helpful to perceive of the project as a viability study.

As presented in the project proposal, the study was undertaken to accomplish the following:

- Identify current and potential future gaps in providing higher education undergraduate and graduate programs that will support key industries and economic vitality in the Mesabi Range Region.

- Conduct market research to identify the current and future demand for undergraduate and graduate education in the region.

- Develop alternatives and recommendations on how regional educational needs can be met by the University of Minnesota Duluth, Minnesota State Colleges and Universities, or joint degree programs.

To identify current and potential future gaps in higher education programs, a variety of research efforts were undertaken. These efforts included the exploration of existing secondary data, key informant interviews involving secondary and post-secondary educators and industry personnel, community college student focus groups, and surveys of community college students, high school students and human resource directors. The market research component of the study made use of these same information and data sources. Following an analysis of the research findings and a presentation of preliminary findings to an audience of key stakeholders, recommendations on potential ways to meet regional educational needs were developed and are presented at the end of this report. The study was not undertaken as a cost/benefit analysis but rather was limited in scope to exploring student demand and employer needs for higher education.

THE STUDY PROCESS

Meetings and interviews were held throughout the three months of the study, which was launched October 15, 2007. Feedback from these exchanges was invaluable in optimizing the research process and obtaining helpful context in which to frame the study. A review of existing data was an ongoing part of the study. Data included both education-related data and industry/workforce-related data. Among the sources were various educational entities such as the Minnesota Department of Education, the Minnesota Office of Higher Education, MNSCU (Minnesota State Colleges and Universities), the University of Minnesota Twin Cities, the University of Minnesota Duluth and ACT, as well as governmental agencies such as the Bureau of Labor

Statistics, the U.S. Census Bureau, Minnesota Department of Employment and Economic Development (DEED) and the Minnesota State Demographic Center.

A critical component of the study included gathering input from groups with a potential interest in four-year and graduate-level academic programs offered in the Mesabi Range Region. To learn more about their level of interest and future plans, various primary research components included focus group studies involving students at three of the community colleges in the Northeast Higher Education District, web-based surveys of community college students at all five of the NHED colleges, telephone surveys of incumbent workers in the Mesabi Range Region, paper surveys of high school seniors at high schools in the Mesabi Range Region, and a survey of human resource directors (copies of the questionnaires used are provided in Appendices A, B, C, D, E and F).

Key informant interviews were conducted on a continual and as-needed basis from October 15 to December 28, 2007. The 52 individuals interviewed either by telephone or in-person included many post-secondary administrators, secondary school leaders, researchers, human resource experts, industry experts and workforce development specialists (see Appendix G). Much of the information gained from the interviews focused on a review of existing academic programs and structures, and a discussion of the need for new, additional or revised programs and structures related to workforce issues in the region.

The key informant interviews led to the development of themes or issues relevant to the study of expanded four-year and graduate-level program offerings in the Mesabi Range Region. These themes include the following topics:

- Program curricula and supporting courses
- Viability of on-site four-year programs
- Staffing, i.e., fulltime on-site faculty, adjunct faculty, support personnel, etc.
- Delivery modes, i.e., on-site, online, ITV
- Community buy-in, i.e., internship prospects, employer support for employee continuing education opportunities
- Industry need
- Student demand, i.e., current enrollment trends, mobility, etc.
- Education partners, i.e., NRRI (Natural Resources Research Institute)
- Quality of community colleges as preparation for transfer to new on-site four-year programs
- Leadership/administration/management, i.e., distinct institution, joint program administration, shared faculty, resource efficiencies
- Location, i.e., facilities, transportation, economic engine
- Marketing/communications

Additional information related to themes considered pertinent to the study was collected using existing secondary data sources, focus group research and survey

research. Alternatives and recommendations regarding regional educational needs were then developed through further discussion and understanding of these themes. The research activities undertaken as an exploration of key issues included the following:

- Secondary data collection, review and analysis
  - NHED (Northeast Higher Education District) fact books, websites
  - MNSCU (Minnesota State Colleges and Universities) data
  - University of Minnesota survey data and institutional research data
  - Arrowhead University Consortium data
  - Minnesota Department of Education data
  - Minnesota Office of Higher Education data
  - ACT data
  - Bureau of Labor Statistics data
  - Minnesota Department of Employment & Economic Development (DEED)
  - Minnesota State Demographic Center data

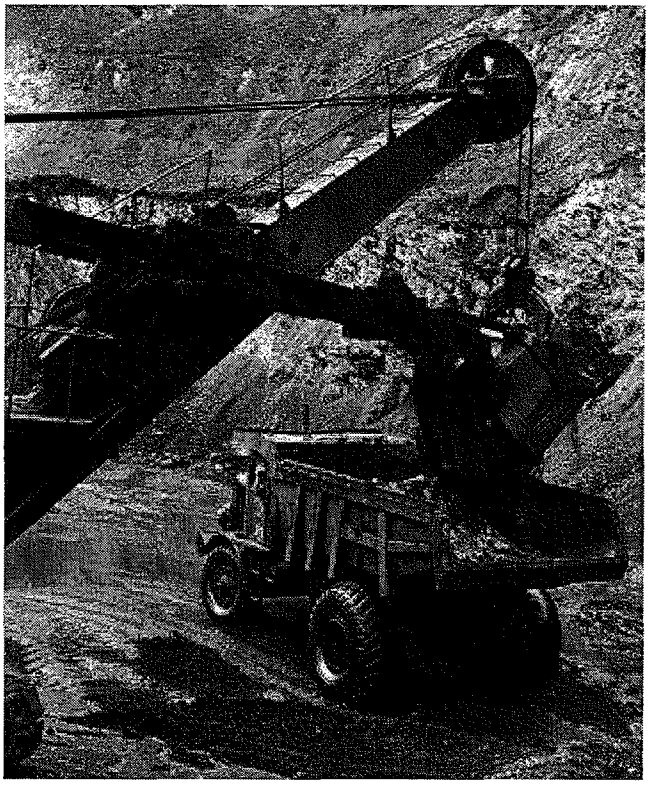
- Primary data collection
  - Focus groups:
    - Community college students
  - Web-based surveys:
    - Community college students likely to graduate in spring 2008
    - Area human resource directors
  - Telephone survey:
    - Currently employed residents age 25-50
  - Paper survey:
    - High school seniors likely to pursue STEM-related (science, technology, engineering and math) careers
  - Key informant interviews:
    - Post-secondary administrators
    - Secondary administrators
    - Employers
    - Human resource directors

A brief overview of the historical and cultural background of the Mesabi Range Region is provided in the following section to provide a context for this study.

HISTORICAL/CULTURAL BACKGROUND

Understanding the history of the Mesabi Range Region in Minnesota is helpful in both studying higher education needs in the region and in developing a strategy to meet potential needs. The following is a brief history of the region taken directly from the Central Iron Range Initiative web site (http://www.cirimn.com/):

> Minnesota iron ore was first observed in 1850 east of Lake Vermilion, and again in 1865 when Henry H. Eames, Minnesota's state geologist, reported iron ore deposits in the Lake Vermilion area. Then, following a report of gold in the same Lake Vermilion area, prospectors and explorers headed for northeastern Minnesota. Little gold was found, so the explorers lowered their sights and settled for iron ore, and in the 1870s iron ore samples were being packed out of the deep forests for inspection and analysis.
>
> The evidence was convincing, and on July 31, 1884, with a shipment of iron ore from the new Minnesota Mine (later named Soudan) on the Vermilion Iron Range, Minnesota became an iron ore producing state. In the next decade, the Mesabi Range came into production with the opening of the Mountain Iron Mine in 1892.



(photo courtesy of Iron Range Research Center)

In quick succession, iron mines were discovered and opened in the Biwabik and Hibbing areas, and near Virginia and Eveleth. Most early mines were operated as underground mines, but the large deposits were soon converted into open-pit operations, forerunners of the big iron ore mines typical of the Mesabi Iron Range. As mining moved westward along the Mesabi, a third Minnesota iron

range was being explored and developed. The Cuyuna Range, east and north of Brainerd, shipped its first iron ore in 1911.

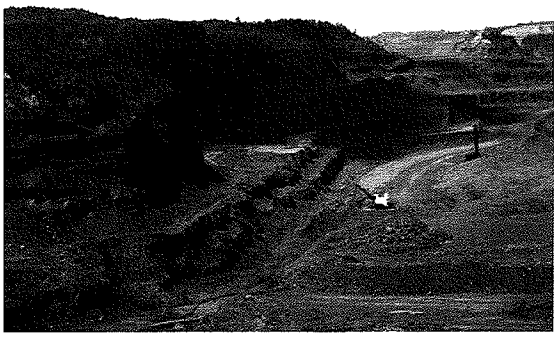
Discovery and development of Minnesota's three iron ranges came at an important time for our nation and for the world, for the Twentieth Century with its world wars and great economic growth would demand tremendous quantities of iron ore.

According to a feature story by Minnesota Public Radio's Bob Kelleher (December 6, 1999), the Mesabi Range Region was suffering by the 1930s:

After just 50 years of intensive mining, Minnesota's reserves of high-grade iron ore, once thought inexhaustible, were nearly spent. Meanwhile, the Great Depression had idled America's industries and forced Minnesota's iron miners into work camps and soup lines. Demand for steel was absolutely flat. A workforce of 12,000 miners in the 1920s shrank to less than 2,000 in the 1930s.

In April of 1941, Governor Harold Stassen signed legislation creating the Department of Iron Range Resources. Iron Range Resources set out to map Minnesota's woodlands and replant the region's cut-over forests. It took a couple of decades, but the thriving trees began drawing wood products businesses like sawmills, fiber board, paper and pulp plants back to Northeastern Minnesota.

More than $2.5 million was ploughed into long-term research which developed viable methods of making iron using the hard, low-grade rock taconite. University of Minnesota Researcher Edwin Davis developed the process and machinery to crush taconite rock, remove waste minerals, and cook the residue into high iron content pellets suitable for the nation's blast steel furnaces.



Mining companies slowly adopted the new processes through the 1960s, and by the '70s, things were cranking.... By the late '70s, Iron Rangers were worried that taconite, like iron ore before, would run out....Thousands of mining jobs were lost for good across the Iron Range. Unemployment in small mining towns like Babbitt reached 85 percent of the workforce.

Virginia native Sally Mayasich discussed the Iron Range culture in a Minnesota Public Radio interview with Stephanie Hemphill and made the following observations in explaining the Iron Range character (September 19, 2005):

> A lot of the Iron Range is that work ethic, and that pride in working hard and sweating...that worship of work gives a lot of Rangers a bit of an attitude. They're known to be cliquish, maybe a little rough around the edges. There's more swearing that goes on around here than maybe in the other, more genteel parts of the state.

Sisu is a Finnish term that applies now to all Iron Rangers. It roughly translates to "determination," but it goes way beyond that. It's just a will to do things that are beyond capacity sometimes. All of those boatloads of immigrants, and all of their determination, and all of them could live with almost nothing. And it is a hard life up here, especially at that time, because it was cold in the winter and you couldn't do as much about it. And they stayed, they weren't going to go. They weren't going to let the weather chase them away, and they weren't going to let the bosses chase them away. That grew into sisu. – Sally Mayasich

(photo courtesy of Iron Range Research Center)

The natural resources and mining industries continue to be a vital part of Minnesota's economy. The mining industry – especially – is important to northeastern Minnesota and the Mesabi Range Region, and impacts the entire state by supplying raw materials, creating direct and indirect jobs, providing funds for the state's schools and university system through royalties, and adding substantially to the state's tax base.

In Minnesota, mining is a two billion dollar industry that directly or indirectly employs over 16,000 Minnesotans. Additionally, the mining companies in Minnesota purchase goods and services from businesses located throughout Minnesota. Taconite mining accounts for 75% of Minnesota's mining revenues. The industrial minerals industry, primarily aggregate production, contributes the remaining 25%.

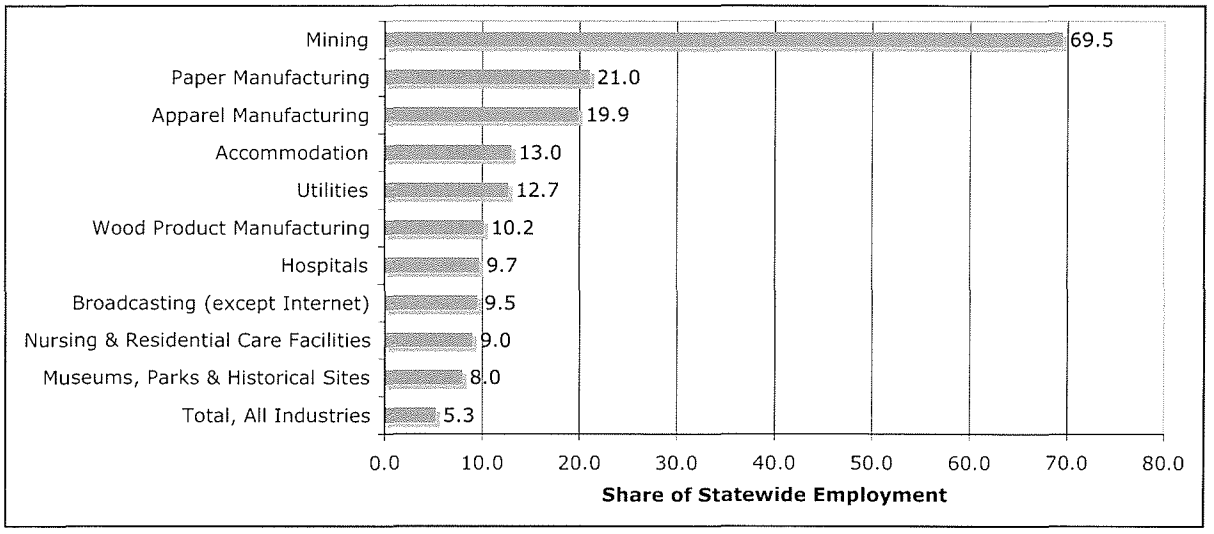
The Minnesota Department of Employment and Economic Development (DEED) defines a region's "distinguishing industries" as those with a better-than-average share of statewide industry employment. Region 3, which includes the Mesabi Range Region, consists of the following Minnesota counties: Aitkin, Carlton, Cook, Itasca, Koochiching, Lake and St. Louis. This region accounts for 5.3 percent of all Minnesota jobs. There are ten distinguishing industries in the region that have an 8 percent or greater share of the state's private employment (Graph 1).

The impact and future of the state's mining industry was recently addressed in an article by Wayne Nelson on BusinessNorth.com. In it he talks about the prospect of an expanding job market in the article "Getting ready for a Range boom" (Nov. 21, 2007).

> Now a new wave of up to nine big industrial projects – many part of a revitalized global steel industry – is knocking at the door of Minnesota's Mesabi Iron Range.
>
> These projects promise up to $5 billion in Iron Range investment over the next five years with as many as 5,000 permanent new jobs. The major economic, social and political implications would likely spill into the Duluth/Superior area, as well. Two iron ore projects – nearly $2 billion in potential investment – are permitted and in the final stages of securing financing. Preliminary construction has begun on the $235 million Mesabi Nugget project, the smaller of the two. It would produce concentrated iron pellets, the industry's first new iron ore product since taconite was developed in the 1950s.
>
> Indiana-based Steel Dynamics and Kobe Steel in Japan, which developed the iron nugget technology, plan to build the plant on the defunct LTV Steel Mining site near Aurora-Hoyt Lakes. About 400 construction workers would be needed followed by about 50 permanent workers, producing about 500,000 tons of iron nuggets annually. Minimill operator, Steel Dynamics, would take 100 percent of that production.
>
> The far larger Minnesota Steel project, with a $1.6 billion price tag, would employ about 2,000 construction workers during a two-year building period. It would be the first North American steel mill operating at an iron ore mine site.
>
> When operational, the taconite-direct reduced iron-slab steel process would employ 700 full-time workers and create an estimated 2,100 spin-off jobs, according to developer Essar Global, the India-based conglomerate. Semi-finished steel slabs produced at the mill near Nashwauk, in Itasca County, would have a ready market at Essar's Algoma Steel mill in Sault Ste. Marie, Ontario. – Wayne Nelson

It is within this context that the need for this study was realized. The potential "Range boom" would require a proactive approach to dealing with the workforce and educational needs associated with it.

Graph 1. Distinguishing Industries of the Iron Range (Region 3).



(Source: DEED, Labor Market Information Office. Quarterly Census of Employment & Wages, 2004)

The following two sections present population and workforce data to assist in framing the past, present and projected environment relative to pertinent educational and workforce issues in the Mesabi Range Region.

DEMOGRAPHICS

The area covered for the majority of the analyses outlined in this report covers Koochiching, Itasca and St. Louis counties, and includes the Mesabi Range Region and the five Northeast Higher Education District community colleges. A map of the Mesabi Range Region as depicted in the project RFP is presented in Graph 2.

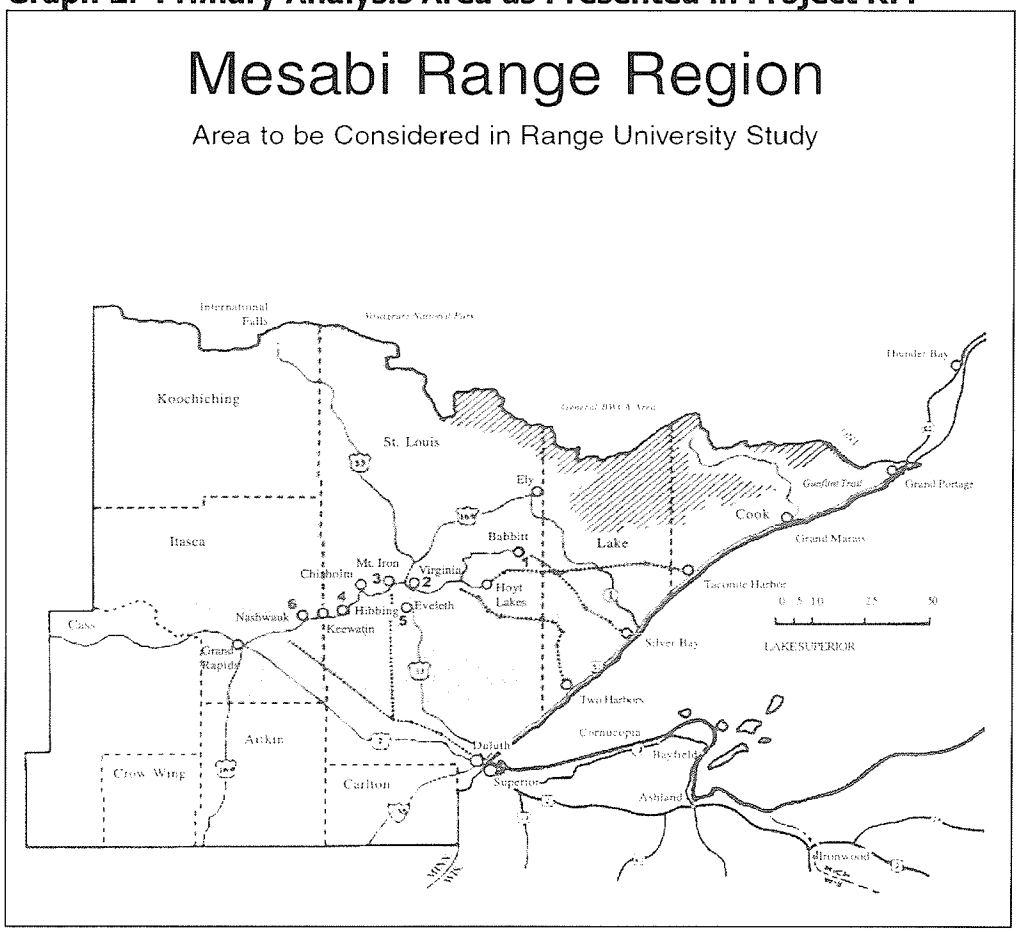
According to data from the Minnesota State Demographic Center, the 2006 population of the three counties was estimated to be 254,290 people, with the Mesabi Range Region population estimated to be 110,000 people. Population growth is growth projected over the next 30 years for Itasca and St. Louis counties and a declining population for Koochiching County (Table 1).

Table 1. Population Projections for Counties in the Mesabi Range Region

County	2006	2010	2015	2020	2025	2030	2035
Itasca	44,347	45,610	46,700	47,630	48,300	48,470	48,590
Koochiching	13,619	13,690	13,520	13,400	13,330	13,150	12,980
St. Louis	196,324	198,010	199,130	200,490	201,850	202,040	202,240

Source: Minnesota State Demographic Center

Graph 2. Primary Analysis Area as Presented in Project RFP

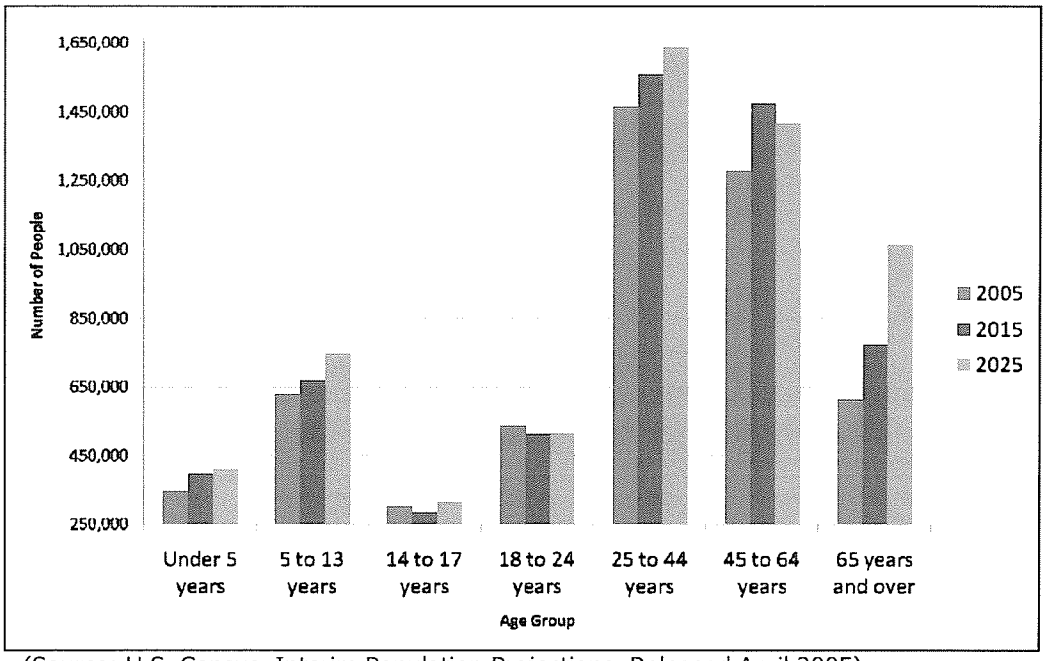


However, documentation from the State Demographic Center web site states, "The numbers do not reflect any special knowledge about individual communities such as zoning regulations, land available for development, current development projects, one-time events or any of the myriad other factors that can and do affect future population. The extrapolations are not a substitute for projections based on such detailed local knowledge and development plans." This is an important clarification given that these population projections do not take into account the projected 2,800 individuals needed to fill the direct and spin-off jobs to be created by the Minnesota Steel project. It can be anticipated that the new jobs will be held by people who may have family members including spouses and children, further increasing the population base for prospective students at educational institutions in the Mesabi Range Region.

Population projections (Graph 3), from a statewide perspective, point to both a declining or stagnant 18- to 24-year-age group (traditional college-age students) and a growing 25- to 44-year-old age cohort (adult learners) and suggests an increased level of competition statewide for students. These projections mirror local and regional estimates and again suggest a higher level of competition for students throughout the region and state. (It is important to note that these projections were done in 2005.)

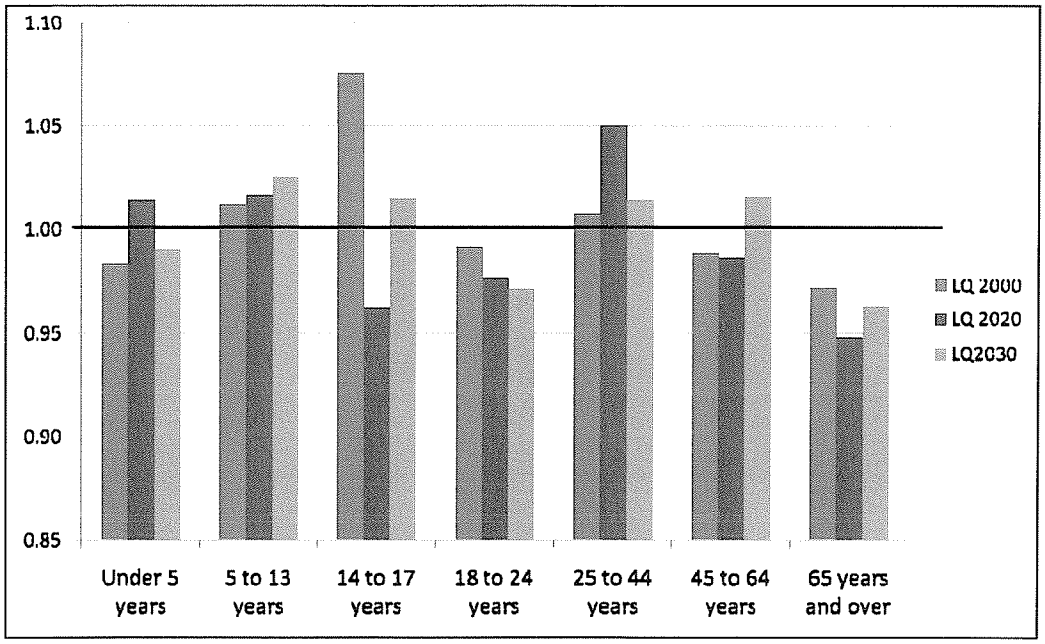
As noted, the state of Minnesota is not expected to see increases in traditional college attendance age groups for another 20-25 years (see Graph 3). While the state is projected to have fewer traditional college-aged residents than the rest of the nation

Graph 3. Minnesota Population Projections



(Source: U.S. Census, Interim Population Projections, Released April 2005)

Graph 4. Comparing Minnesota to the Nation: Minnesota Location Quotient by Age Group



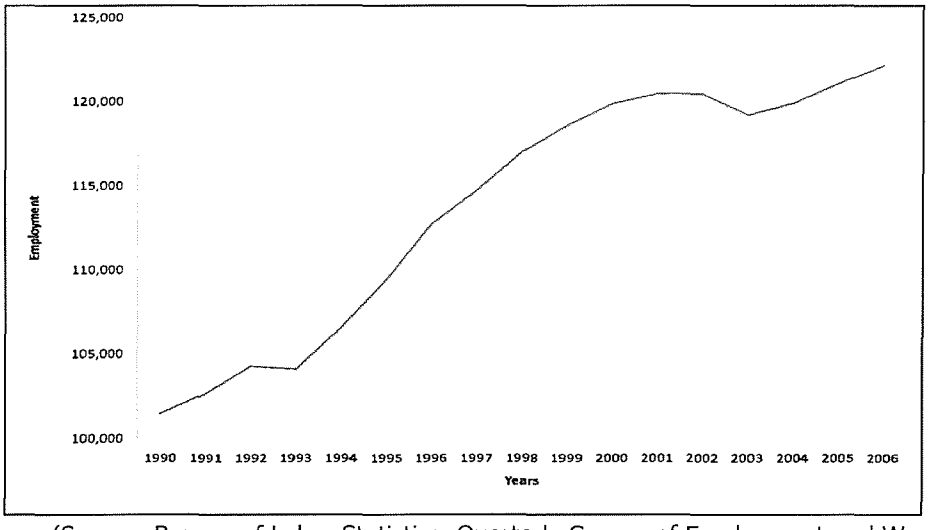
(Source: U.S. Census, Interim Population Projections, Released April 2005)

in the future, Minnesota will experience a growing number of older prospective learners (25-44 years) during the same time span (Graph 4). This graph presents the location quotient for various age categories, comparing the state of Minnesota to the rest of the nation. The location quotient (LQ), frequently used in economic geography and locational analysis, is an index for comparing an area's share of a particular activity with the area's share of some basic or aggregate phenomenon. If an is greater than 1, this indicates a relatively higher concentration in the area, compared to the nation as a whole. If the LQ is less than 1, the area has less of a share than is more generally, or regionally, found.

WORKFORCE DATA

As noted, the Mesabi Range Region is home to a majority of mining-related jobs and industry in Minnesota. While significant on a statewide basis, mining represents a small, but important, part of overall employment in the region. Total employment in the region experienced considerable growth from 1990 to 2000, but has stagnated since 2000, due in part to regional layoffs and national recession (Graph 5, which includes the six counties of Koochiching, Itasca, St. Louis, Lake, Cook and Cass). Opportunities for renewed growth regionally point to natural resource-based industries including mining and forestry. With new technologies serving as a catalyst, these industries and the businesses and services that support them, including construction, should see significant employment growth in the next five to ten years.

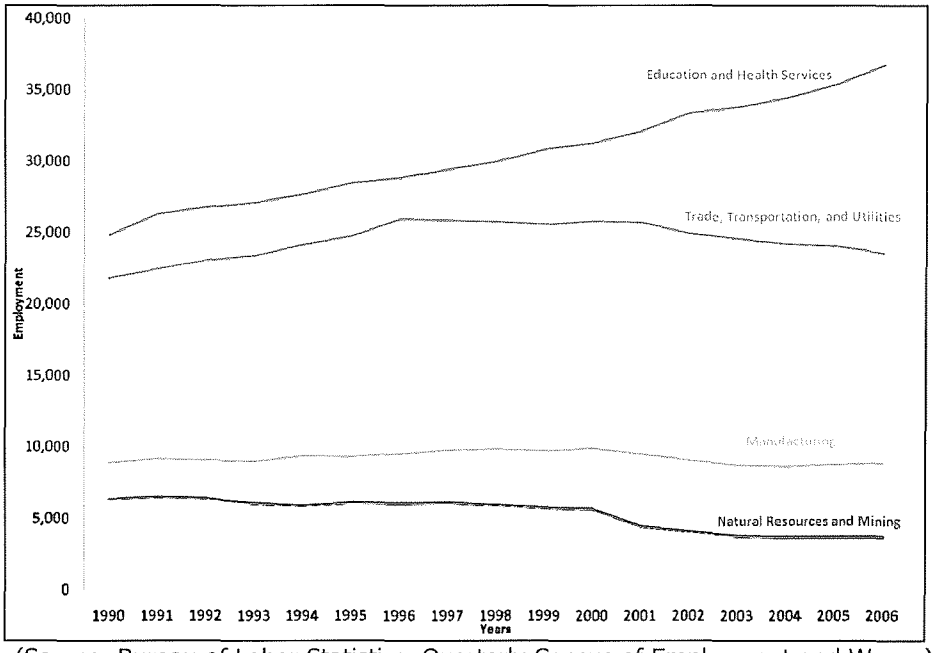
Graph 5. Total Employment, Six County Minnesota Arrowhead Region



(Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages)

Job growth since 1990 has been driven primarily by the health and education sectors (see Graph 6). The other three sectors estimate jobs associated with mining and other commodity-based industries, including shipping. The retail sector is included in Trade,

Graph 6. Minnesota Arrowhead Region, Growth in Select Industries



(Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages)

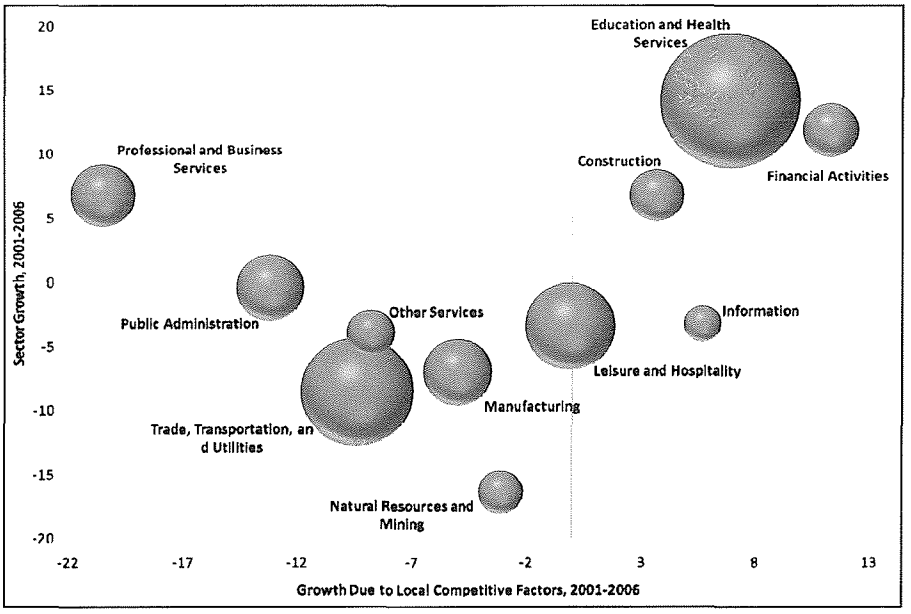
Transportation and Utilities. Natural resources and mining have experienced a slow decline since 1990, but should experience a significant gain as proposed projects develop, including the Minnesota Steel project, which would employ about 2,000 construction workers during a two-year building period. When operational, the taconite-direct reduced iron-slab steel process would employ 700 full-time workers and create an estimated 2,100 spin-off jobs, according to developer Essar Global, the India-based conglomerate.

A review of the major industries (outlined in Graph 6) points to the dominance of education and health services in the region. This industry sector has experienced considerable growth since 1990 and continues to trend upward. With over 36,000 jobs associated with this industry sector, it is by far the largest employee base in the region. This growth is based on both a growing demographic shift toward more seniors (requiring increased health care related services) and growth in the higher educational institutions in the region.

The Competitive Share component (x axis) is an estimate of the percent growth attributed to factors present in the local region (see Graph 7). This is estimated by subtracting the growth effects due to national economic expansion, and effects due to general expansion or decline of a particular sector.

Graph 8 utilizes the same analysis process, specific to St. Louis and Itasca counties, and uses finer breakdown of sectors. Again, the industry sectors showing the highest level of growth are highly dominated by health and education. This growth is two-fold, and is illustrated both in total growth and growth due to local competitive factors.

Graph 7. Arrowhead Region, Shift Share Analysis, 2001-2006



(Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages)

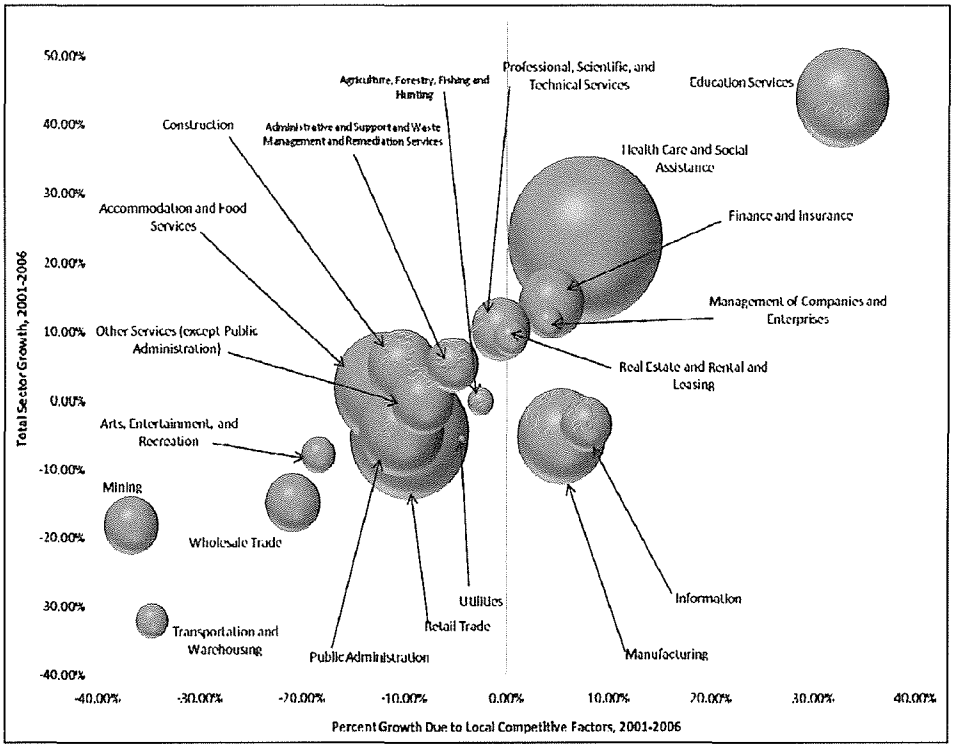
These two industry sectors accounted for roughly 6,700 new jobs in the past five years and have total employment in excess of 30,000 jobs regionally. Regionally, some of the professional services sectors fare better.

The Duluth MSA (Metropolitan Statistical Area) Occupational Location Quotient analysis area includes the Duluth MSA, consisting of St. Louis, Carlton, and Douglas-WI counties (Graph 9). This measure is the concentration in the Duluth area divided by the concentration in the nation. LQ compares the composition of occupations to that of the nation. If Duluth were segregated exactly like a "typical" economy, it would show a 1.0 for each measure. For instance the Duluth area has almost two and a half times more community and social services people than an "average" place.

The shift share for Itasca and St. Louis counties again points to the prevalence of healthcare and education as major drivers within the two-county area both in total growth and growth due to local competitive factors. These two industry sectors accounted for roughly 6,700 new jobs since 2001 and have total employment in excess of 30,000 jobs regionally. Mining has seen a decrease from 2001 to 2006 from 3,448 jobs in 2001 to 2,819 jobs (for an 18.24% decline) in 2006. Total employment within the two county area experienced employment growth of roughly 5,000 from 2001 to 2006, from 94,563 jobs in 2001 to 99,547 in 2006.

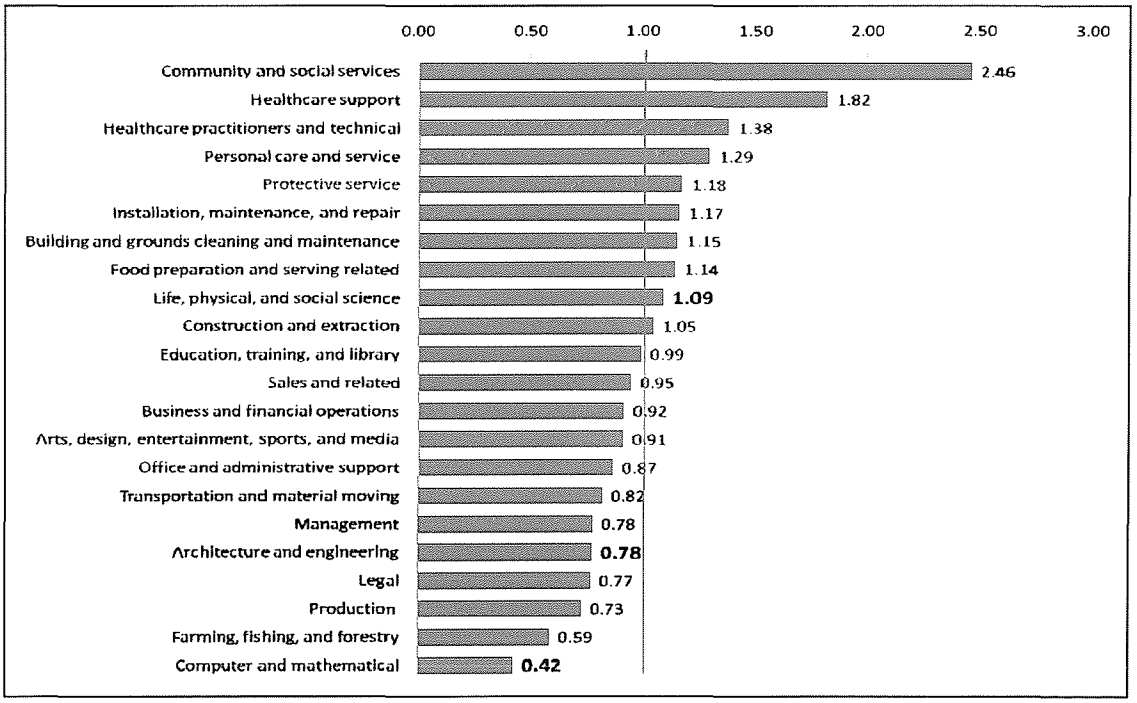
The sectors outlined in Graph 9 are occupations, not industry sectors; so, for instance, an engineer could appear in the mining, business services, government, or

Graph 8. Itasca and St. Louis Counties, Shift Share Analysis, 2001-2006



(Source: Bureau of Labor Statistics, Quarterly Census of Employment and Wages)

Graph 9. Duluth MSA Location Occupational Location Quotients, 2006



(Source: Bureau of Labor Statistics, Occupational Employment Statistics)

manufacturing sectors. Science, Technology, Engineering and Math (STEM) occupations are bolded, and underrepresented in Duluth. Duluth is highly dominated by healthcare and related occupations. One could argue that this shows potential for Duluth to right itself and easily increase STEM jobs, but at this time, while Duluth does employ more than an average number of scientists, there is not a strong cluster of engineers and math professions.

With an extensive array of potential energy- and mining-related projects coming on line, the Mesabi Range Region is poised for extensive job growth in the next two to five years. With a core focus on advanced technologies, the engineering disciplines – including electrical, mechanical, geological and chemical engineering – will be a growing area for higher-end employment within the Mesabi Range Region. Industry experts would anticipate anywhere from 10 to 20% of new hires on these projects to be engineering related.

As potential projects come on line, overall employment within the region will increase. With the bulk of these projects being mining- or energy-related, the industry sector will increasingly see a need for more engineering- and architecture-based occupations. Table 2 illustrates the employment outlook for engineers and architects in Northeast Minnesota. Data elements include net employment growth and net replacement demand over the projection period. Net replacement demand is the net need for new entrants to the field of work, to replace workers who retire or otherwise leave the field; net replacement demand does not include ordinary "churning" movement of workers between jobs. These projections were conducted in 2004, prior to many of the major projects coming on line so do not reflect the potential demand for engineering-related occupations from these projects.

Table 2. Employment Outlook, Northeast Minnesota, Engineering Occupations.

Estimated Employ 2004	Projected Employment 2014	% Change 2004-14	# Change 2004-14	2004-2014 Replacement Openings	2004-14 Total Openings
1,775	1,948	9.7%	173	420	593

(Source: Department of Employment and Economic Development)

Barr Engineering Company, Hibbing, is a prime example of what is driving the engineering demand in the Mesabi Range. Paula Jackson, Human Resources Director for the Hibbing facility, suggests that Barr employs roughly 60% engineer/scientists at its Hibbing facility and 40% technicians and support staff. The company is extremely interested in the offering of an advanced degree in engineering locally to meet their internal needs. The types of engineers that Barr hires include mechanical, electrical and chemical engineers with a core focus on serving the mining and energy industry sectors regionally.

The potential need or desire for a four-year degree program (concentrating on engineering) was best expressed by representatives from the United Steel Workers Union. Tom Aubin (Vice President of Contracting Out) and Paul Monacelli (Training Coordinator) spoke passionately about what this type of development could mean for the mines and for the region both. They spoke about the need in the mines for engineers with an understanding of the mining industry from both a safety and production standpoint. They felt that a degreed program locally could help extend the life of the mines, meaning more jobs for a longer period of time. They felt a four-year program would be beneficial to the region as an opportunity to educate and keep the regional youth in the area with potential for higher-wage jobs.

Among the key findings related to workforce issues are:

- Job growth since 1990 has been driven primarily by the health and education sectors.
- Over the past 5 years, average annual pay in the mining sector has increased substantially ($52,000 average in 2001 to $71,000 in 2006). This increase of annual pay suggests the sector's shift toward more higher-skill higher-paying engineering-based occupations.
- Occupations are highly concentrated in Healthcare; STEM (Science, Technology, Engineering and Mathematics) occupations are underrepresented.
- As new projects come online, there will be increased competition for skilled workers in all disciplines and occupations.
- A significant problem is that while the Professional & Business Services sector has grown, it is lagging significantly compared to the rest of the nation. This sector contains many high-end knowledge-based services, and is often an important growth sector in many well-performing small cities.

Additional Findings from Industry/Workforce-Related Key Informant Interviews

Among the 26 individuals who took part in key informant interviews, there was considerable consensus, particularly related to the need to focus more attention on providing more educational capacity for engineering graduates to meet anticipated workforce needs in the Mesabi Range Region (a list of interviewees is provided in Appendix G). Key findings from the interviews include the following:

- Mining and power industries are looking for skilled employees and engineers (applied).
- Current employers and future projects are looking for similar skills.
- Engineering will be key to all new projects in the area. Engineering disciplines would include virtually all types of engineering including geological, mechanical, and electrical hydrologic engineering. Long-term projections conducted by DEED in 2004 suggest a ten percent increase in the need for engineers and

architects in Northeast Minnesota. New projects coming online and under development, since 2004, will drive this need even higher.
- Engineers are difficult to recruit to the area/region; healthcare is easier.
- Engineering-related occupations are an increasing percentage of the mining industry (vs. skilled workers).
- Any potential degree program should build on the heritage and natural resources of the area.
- There is a willingness to implement more internships and co-ops if appropriate coursework/program is in place.
- While there are staffing needs (in the healthcare area), it is felt that education and training needs are being met regionally (UMD, BSU).
- Support businesses (electrical, consulting, engineering) such as Barr Engineering Company hire between 20 and 60 percent engineers/scientists.

Also mentioned as a benefit of having an expanded higher education mission in the Mesabi Range Region was having the capacity for businesses to use higher education as a rationale for potential expansion of the business sector of the economy.

EDUCATION IN THE MESABI RANGE REGION

In the state of Minnesota the Mesabi Range Region is unique in that there is no four-year institution of higher education in an area with a population of over 100,000 residents. The geographic area covered by the five community colleges of the Northeast Higher Education District is enormous, covering most of the northeast corner of Minnesota. Efforts at meeting post-secondary educational needs in the Mesabi Range Region began with the creation of the five community colleges and have expanded to accommodate, in a limited way, the pursuit of education beyond the two-year community college experience. Distance education has been the method most often used to facilitate education at the bachelor's degree level and beyond. Still, many students need to complete their last two years of education at a residential campus setting outside of the Range. Graduates of Itasca Community College's touted engineering program provide an example of students needing to go elsewhere to finish the last two years of a baccalaureate program, and yet many return to work in the Mesabi Range Region. For example, over the past ten years approximately 75 of Itasca's engineering students have earned baccalaureate degrees elsewhere (oftentimes at engineering schools in North Dakota) and returned to work in the Mesabi Range Region, where they comprise almost a third of the current engineering workforce.

In the area of secondary education, residents of the Mesabi Range Region have been successful by many measures in creating solid educational opportunities for their residents. For example, Northeast regional high school graduation rates (Arrowhead Region, which includes the Mesabi Range Region) exceed the state and national averages, with 88% of students graduating, while the Minnesota state average is 85% and the national average was 69% (National Center for Education Statistics 2005,

strategy for the greater good of the region and not intended to replace, remove or take over for any of the people or organizations who came to the table. The Northeast Higher Education District promotes interdependence, sharing a president and administrative resources when possible; however, institutions maintain their own mission and programs. Distance education has been the method most often used to facilitate education at the bachelor's degree level and beyond for place-bound students in the Mesabi Range Region. Table 4 provides basic enrollment and program information about the five community and technical colleges in the Northeast Higher Education District: Hibbing Community College, Itasca Community College, Mesabi Range Community & Technical College (two campuses), Rainy River Community College and Vermilion Community College.

The enrollment data reported in Table 5 shows that a large percentage of the students in the Mesabi Range Region stay nearby to start their post-secondary education. More than a third of the 2006 high school graduates in the region were enrolled at one of the five Northeast Higher Education District institutions in the fall semester of 2006. Students from Grand Rapids High School and Mesabi East High School (Virginia) in particular stayed close to home, with almost a third of each of their 2006 graduating classes enrolling at the local colleges (Itasca Community College and Mesabi Range Community and Technical College).

Table 6 reports the percentage of students from the three counties comprising the majority of the geographic area specifically identified as the Mesabi Range Region (Itasca, Koochiching and St. Louis) who enrolled at select Minnesota institutions. Students from the three counties in the Mesabi Range Region represent more than

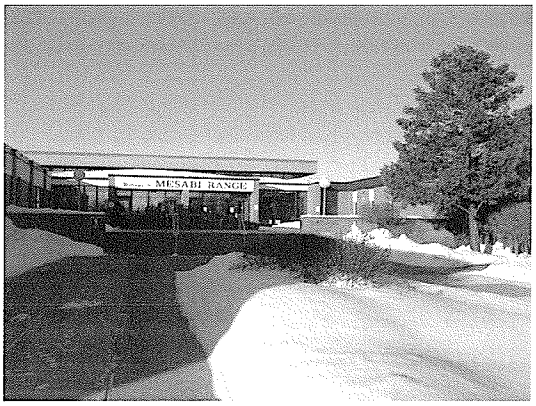
Table 4. Northeast Higher Education District Community & Technical Colleges: Programs and Enrollment (2006)

Institution	Enrollment	Largest Programs	Unique Programs
Hibbing CC Hibbing	1,325	Law enforcement, nursing, electrical maintenance, liberal arts	Helicopter pilot training, online medical lab tech, engineering technology, pharmacy technician
Itasca CC Grand Rapids	1,183	Liberal arts, psychology, engineering, practical nursing, natural resources	Geography/GIS, American Indian Studies, pulp & paper, early childhood education
Mesabi CC Virginia and Eveleth	1,494	Transfer programs, carpentry, industrial mechanical technology, nursing	Industrial technology, human services, graphic design/print communications, masonry
Rainy River CC International Falls	400	Liberal arts, nursing, business office specialist, fitness specialist	Indigenous studies
Vermillion CC Ely	826	Wildland/wildlife law enforcement, natural resources technology	Taxidermy, professional forest harvester, watershed science
Total 2006 Enrollment: 5,228 students			

(Source: NHED Office of Institutional Research)

three-fourths of the total 2006 new student enrollment at Mesabi Range Community and Technical College and nearly 70% of newly enrolled freshmen at Itasca Community College. Sixty-four percent of all Hibbing Community College new students were from Itasca, Koochiching or St. Louis Counties, as were 42% of the new students at Rainy River Community College. The University of Minnesota Duluth is the only four-year institution at which significant numbers of students (223) from the three counties enroll as new freshmen (204 of the students are from St. Louis County).

Students' attendance patterns in the Mesabi Range Region are influenced considerably by the availability of specific programs. The focus of this study pays special attention to STEM-related programs (Science, Technology, Engineering and Mathematics), especially as they relate to industries in the areas of natural resources and mining. Table 7 lists some of the two-year programs that are currently available to students.



Students transferring from the Northeast Higher Education District's community colleges end up at a variety of institutions; in fact, based on 2005 statistics, almost one-third of those identified transferred to another community college. Table 8 presents the number of students at Minnesota institutions that previously had been enrolled at one of the five Northeast Higher Education District institutions. Bemidji State University was the recipient of the largest group of Northeast Higher Education District transfers – 204 students. The University of Minnesota system enrolled 172 transfer students from the Northeast Higher Education District.

Table 5. Regional High School Spring 2006 Graduates / Enrolled as New Northeast Higher Education District Community College Students Fall 2006

School	graduating class size	Enrolled at Hibbing CC		Enrolled at Itasca CC		Enrolled at Mesabi CC		Enrolled at Rainy River CC		Enrolled at Vermillion CC		Enrolled at any of the 5 cc's	
		N	% of hs class	N	% of hs class	N	% of hs class	N	% of hs class	N	% of hs class	N	% of hs class
Greenway	**87**	11	12.6%	28	32.2%	3	3.4%	0	0.0%	0	0.0%	42	48.3%
Nashwauk / Keewatin	**48**	9	18.8%	12	25.0%	5	10.4%	0	0.0%	0	0.0%	26	54.2%
Mesabi East	**63**	4	6.3%	2	3.2%	21	33.3%	0	0.0%	0	0.0%	27	42.9%
Cherry	**29**	6	20.7%	0	0.0%	5	17.2%	0	0.0%	0	0.0%	11	37.9%
Mt Iron / Buhl	**32**	6	18.8%	2	6.3%	6	18.8%	0	0.0%	0	0.0%	14	43.8%
Eveleth / Gilbert	**95**	10	10.5%	2	2.1%	25	26.3%	0	0.0%	0	0.0%	37	38.9%
Grand Rapids	**273**	9	3.3%	89	32.6%	0	0.0%	0	0.0%	0	0.0%	98	35.9%
Chisholm	**44**	12	27.3%	3	6.8%	2	4.5%	0	0.0%	4	9.1%	21	47.7%
Hibbing	**180**	48	26.7%	2	1.1%	4	2.2%	0	0.0%	2	1.1%	56	31.1%
Virginia	**124**	6	4.8%	6	4.8%	29	23.4%	0	0.0%	0	0.0%	41	33.1%
Ely	**59**	3	5.1%	2	3.4%	1	1.7%	0	0.0%	9	15.3%	15	25.4%
International Falls	**95**	4	4.2%	5	5.3%	0	0.0%	23	24.2%	1	1.1%	33	34.7%
Floodwood	**33**	9	27.3%	0	0.0%	3	9.1%	0	0.0%	0	0.0%	12	36.4%
Albrook	**28**	0	0.0%	1	3.6%	4	14.3%	0	0.0%	1	3.6%	6	21.4%
Cherry	**29**	6	20.7%	0	0.0%	5	17.2%	0	0.0%	0	0.0%	11	37.9%
Cotton	**20**	3	15.0%	0	0.0%	3	15.0%	0	0.0%	0	0.0%	6	30.0%
Cook	**32**	7	21.9%	2	6.3%	2	6.3%	0	0.0%	0	0.0%	11	34.4%
Orr	**27**	0	0.0%	2	7.4%	0	0.0%	0	0.0%	0	0.0%	2	7.4%
Tower-Soudan	**28**	5	17.9%	4	14.3%	2	7.1%	0	0.0%	0	0.0%	11	39.3%
Bigfork	**21**	3	14.3%	4	19.0%	0	0.0%	0	0.0%	0	0.0%	7	33.3%
Total	**1347**	**161**	12.0%	**166**	12.3%	**120**	8.9%	**23**	1.7%	**17**	1.3%	487	36.2%

(Source: Minnesota Department of Education, Northeast Higher Education District Institutional Research)

Table 6. Minnesota County of Residence at the Time of Admission for New Entering Students Who Attended a Minnesota Post-Secondary Institution in Fall 2006

		Minnesota County of Residence							
Institution Enrolled Fall 2006	Total New Student Enrollment*	New Students from Itasca County		New Students from Koochiching County		New Students from St. Louis County		New Students: 3 Range counties	
Mesabi Range Com & Tech College	286	15	5.2%	3	1.0%	201	70.3%	219	76.6%
Itasca Community College	333	197	59.2%	1	0.3%	32	9.6%	230	69.1%
Hibbing Community College	404	56	13.9%	8	2.0%	193	47.8%	257	63.6%
Rainy River Community College	112	0	0.0%	46	41.1%	1	0.9%	47	42.0%
Vermilion Community College	184	0	0.0%	1	0.5%	34	18.5%	35	19.0%
U of M - Duluth	2315	15	0.6%	4	0.2%	204	8.8%	223	9.6%
College of St. Scholastica	523	0	0.0%	0	0.0%	46	8.8%	46	8.8%
Bemidji State University	658	10	1.5%	11	1.7%	21	3.2%	42	6.4%
U of M - Minneapolis/St. Paul	5439	15	0.3%	4	0.1%	76	1.4%	95	1.7%
St. Cloud State University	2159	4	0.2%	1	0.0%	22	1.0%	27	1.3%
Minnesota State University Mankato	2165	4	0.2%	0	0.0%	16	0.7%	20	0.9%
Total	14,595	316	2.2%	79	0.5%	846	5.8%	1241	8.5%

(Source: Minnesota Office of Higher Education)

*includes only those institutions considered key to the present study

Table 7. NHED Natural Resources, STEM and Mining-Related Programs

Program	Hibbing	Itasca	Mesabi	Rainy River	Vermillion
Engineering	O	O			
Environmental Studies		O			
Forestry		O			
Industrial Technology (mining emphasis)			X		
Natural Resources Management		X/O			
Natural Resources Technology					X
Nursing-Practical		X	X	X	
Nursing-Registered	O				
Pulp & Paper		X			
Water Quality Technologies					X
O – Transfer Program X – A.S. or A.A.S. Degree					

The Arrowhead University Consortium facilitates the delivery of bachelor's and graduate degree programs for the Northeast Higher Education District. Working with Bemidji State University, the University of Minnesota Duluth and the College of St. Scholastica, four-year degrees (B.S., B.A.S., B.A.) are available in business administration, applied psychology, management, nursing, teacher education and technology management. Graduate degrees (M.Ed., M.A., M.S.) are available in education, management and engineering management. Courses for these programs are not necessarily available at all times. The enrollment for Arrowhead University Consortium courses for fall 2007 is as follows:

- On-site enrollment (FTF) Fall 2007:
  - 38 - B.S. in Applied Psychology
    (offered by Bemidji State University at Hibbing Community College)
  - 9 - RN to BA in Nursing
    (offered by College of St. Scholastica at Hibbing Community College)
  - 15 - B.A. in Management
    (offered by College of St. Scholastica at Itasca C.C.)
  - Total: 62

- Online enrollment Fall 2007:
  - 28 - B.S. in Business Administration (Bemidji State University)
  - 8 - B.A.S. in Psychology (University of Minnesota Duluth)

Table 8. Receiving Institutions of NHED Transfer Students – 2005

Where NHED Transfer Students Enrolled	Previously Enrolled at:					
	HCC	MCC	ICC	VCC	RRCC	Total
Lake Superior College	20	36	18	16	7	97
Hibbing Community College	0	34	34	10	16	94
Central Lakes College	20	12	3	22	1	58
Mesabi Range Community and Technical College	23	0	4	12	3	42
Itasca Community College	14	10	0	5	2	31
Anoka RamseyCommunity College	6	5	5	4	2	22
Fond du Lac Tribal and Community College	3	6	7	5	1	22
Century College	8	2	2	2	2	16
Minneapolis Community and Technical College	1	3	6	2	3	15
North Hennepin Community College	4	3	0	5	1	13
Northland Community and Technical College	2	2	4	0	5	13
Inver Hills Community College	2	2	3	4	1	12
Minnesota State Community and Technical College	1	4	3	4	0	12
Normandale Community College	4	2	2	2	1	11
Minnesota West Community and Technical College	8	0	0	2	0	10
Rochester Community and Technical College	3	1	1	4	0	9
Ridgewater College	1	0	3	2	2	8
Northwest Technical College Bemidji	1	2	3	0	1	7
Rainy River Community College	4	2	1	0	0	7
St. Cloud Technical College	2	3	2	0	0	7
Dakota County Technical College	1	2	2	1	0	6
Riverland Community College	2	1	0	2	0	5
South Central College	1	0	1	3	0	5
Vermilion Community College	1	4	0	0	0	5
Alexandria Technical College	1	0	1	2	0	4
Anoka Technical College	2	0	1	1	0	4
Hennepin Technical College	0	0	2	2	0	4
Saint Paul College	1	1	2	0	0	4
Minnesota State College Southeast Technical	1	1	0	0	0	2
Total at CC's	**137**	**138**	**110**	**112**	**48**	**545**
Bemidji State University	39	38	81	20	26	204
St. Cloud State University	10	24	12	18	3	67
Minnesota State University, Mankato	12	21	4	8	1	46
Minnesota State University Moorhead	5	8	5	15	6	39
Metropolitan State University	11	6	1	7	0	25
Winona State University	4	5	0	5	1	15
Southwest Minnesota State University	2	0	0	2	0	4
Totals at MNSCU colleges	**83**	**102**	**103**	**75**	**37**	**400**
All Other	91	68	26	60	44	289
University of Minnesota	59	51	18	26	18	172
Border State	64	29	25	33	20	171
Other Minnesota	44	47	18	25	8	142
Total other	**258**	**195**	**87**	**144**	**90**	**774**
Grand Total	**478**	**435**	**300**	**331**	**175**	**1719**

(Source: Minnesota State Colleges and Universities, Office of the Chancellor Program Collaboration and Transfer, Office of Research and Planning)

Table 9 presents the four-year engineering programs at Minnesota colleges which have been mentioned as the key players in the potential expansion of engineering programs to an institution in the Mesabi Range Region. Some of the programs of particular interest were recently added to the academic offerings at their institutions, i.e., Engineering Technology and Applied Engineering at Bemidji State University, and the University of Minnesota Duluth's Civil Engineering emphases in Geotechnical/ Mining Engineering, Structural Engineering, Transportation Engineering, and Water Resources Engineering.

Table 9. Existing Minnesota Engineering Programs

	UM-Twin Cities	UM-Duluth	MSU-Mankato	MSU-St. Cloud	Bemidji State University
Applied Engineering					X
Chemical Engineering	X	X			
Civil Engineering	X	X	X		
CE – Geotechnical/ Mining Engineering		X			
CE – Structural Engineering		X			
CE – Water Resources Engineering		X			
CE – Transportation Engineering		X			
Computer Engineering	X		X	X	
Electrical Engineering	X	X	X	X	
Electrical Engineering Technology			X		
Engineering Technology					X
Manufacturing Engineering				X	
Manufacturing Engineering Technology			X		X
Mechanical Engineering	X	X	X	X	

(source: institutional web sites and catalogs)

FINDINGS FROM EDUCATORS, CURRENT AND PROSPECTIVE STUDENTS, AND HUMAN RESOURCE DIRECTORS

Following are the findings from the various key informant interviews, focus groups and surveys conducted as part of the study. Interviews were conducted from October 15 to December 28, 2007; focus groups were completed in November 2007 and most of the surveys were initiated in November and were completed in December, although one of the community college surveys was conducted in January 2008.

Educators Key Informant Interviews

Educators consisting of school superintendents, community college provosts, administrators at four-year universities, and higher education system researchers were among the 21 individuals interviewed as part of the study's Key Informant Interviews. Below are some of the key findings in regard to existing academic programs:

- University of Minnesota Duluth has several relevant engineering programs related to employer needs in the Mesabi Range Region.
- Bemidji State University will be offering an Applied Engineering program beginning fall 2008 that may supplement expanding manufacturing workforce needs in the Mesabi Range Region.
- Itasca Community College's engineering program is seen as unique and well-recognized.
- There is interest in expanding Itasca Community College's engineering program to a four-year program.
- Healthcare programs preparing students to transfer to four-year programs are primarily limited to nursing.
- Arrowhead University Consortium is serving a limited role in facilitating expansion of programs outside of applied psychology, nursing, management and business administration.
- Arrowhead University Consortium is fostering/nurturing potential programs in higher education in cooperation with St. Cloud State University and in engineering in cooperation with Minnesota State University Mankato.
- Potential academic development with MNSCU Centers of Excellence exists.
- Some individuals think future jobs will be for technicians, so question the need for four-year programs.
- Most of the academic programs offered via various Northeast Higher Education District delivery methods are seemingly self-contained.

Among the views expressed by the key informant interviewees relative to potential new programs were the following:

- Most of the interviewees recommend a broad focus on natural resources programs, including engineering programs related to natural resources.

- The issue of supporting curricula for new programs was raised as a consideration.
- The need for engineers goes beyond mining, i.e., energy-related, pulp and paper, water resource management, and chemical/physics-related research.
- The potential for internships/cooperative education experiences is high.

Current Community College Students (Focus Groups)

Focus groups were held at three community colleges – Hibbing Community College, Itasca Community College, and Mesabi Range Community & Technical College in Virginia. Each group numbered between 10 and 16 students and each session typically lasted over an hour. Among the key findings from the focus groups were the following:

- There was consensus among the students that they would prefer attending on-site classes to obtain a four-year degree in the Mesabi Range Region, regardless of where the site might be located.
- Students generally prefer on-site delivery to ITV delivery and online delivery.
- Students desire to save money by staying closer to home.
- Four-year degree program would help communities in the Mesabi Range Region.
- Most of the focus group participants are interested in higher-level degrees beyond the bachelor's degree.
- Students think the Mesabi Range Region offers opportunities to target learning in the field with hands-on projects related to coursework, i.e., internships, cooperative education experiences.
- A common opinion is that a location in the Mesabi Range Region for bachelor's degree programs would avoid transfer hassles.
- Students consider program quality to be a plus if there is a University of Minnesota affiliation; whereas, MNSCU (Minnesota State Colleges and Universities) affiliation is thought to make transferring easier.
- Many focus group participants do not know about the Arrowhead University Consortium – which suggests it has a limited presence.
- Students think the opportunity for a stand-alone university in the Mesabi Range Region would provide focus on mining technology, forestry, ecology, and watershed research.
- Consensus holds that program quality is a critical issue for any 4-year initiative.

Community College Students Likely to Graduate in 2008 (Internet Survey)

In cooperation with the community college provosts, email messages were sent to all students likely to graduate in the spring of 2008 encouraging them to complete a web-based questionnaire. Of the 375 students who responded and completed a survey, 167 were from Itasca Community College, 82 were from Mesabi Range Community and Technical College, 66 were from Hibbing Community College, 34 were from

Vermilion Community College, and 26 were from Rainy River Community College (with an estimated 767 students likely to graduate with an Associate degree, the response rate is 49%). Complete tabulated results are provided in Appendix H. Key findings learned from an analysis of the survey data included the following:

- 70% (262) of the respondents indicate plans to transfer to a four-year college, 18% (68) are not sure of their post-graduation plans.
- 76% of those students who said they are considering transferring say having a bachelor's degree offered by a college in the Mesabi Range Region would be "very valuable."
- 70% say they would attend if a bachelor's degree program were available at one of the community colleges in the Mesabi Range Region.
- 64% say it would be "very valuable" to them if graduate degree programs were offered on-site at a campus in the Mesabi Range Region (40% plan to obtain at least a master's degree).
- 29% indicate they plan to attend Bemidji State University, 17% plan to attend the University of Minnesota Duluth, 9% the College of St. Scholastica, 6% the University of Minnesota Twin Cities and 5% the University of North Dakota.
- 94% say a transfer college having the program they want to pursue is "very important" in their decision on where to transfer.
- 75% who do not plan to transfer say cost savings is "very important" in their transfer decision, compared to 63% of those who do plan to transfer.
- 56% of students not planning to transfer say closeness to home is a "very important" factor in their transfer decision, compared to 52% of those who do plan to transfer.
- 53% of all respondents would like to live in the Mesabi Range Region after college.
- 63% expect jobs related to their expected degrees to be available in the Mesabi Range Region, and 26% indicated they are "not sure."

Students were asked where they would prefer attending a college if a bachelor's degree program were offered in Eveleth, Grand Rapids, Hibbing or Virginia, and they overwhelmingly indicated the city that was home to the community college in which they were currently enrolled (see Table 10).

Students were also asked to indicate their level of interest in obtaining a bachelor's degree from the University of Minnesota Duluth if they could complete that institution's classes at one of the community colleges in the Mesabi Range Region; they were asked the same question for Bemidji State University and Minnesota State University Mankato. For each of the three institutions, students who said they "would definitely pursue a degree" were included in Table 11, which shows that 45.5% of all respondents indicated that they "would definitely pursue a degree" at UMD; 40% "would definitely pursue a degree" at BSU, and 21.4% "would definitely pursue a degree" at MSU-Mankato. When respondents were sorted by their majors, 54% of the nursing students and nearly half of the engineering students indicated they "would

definitely pursue a degree" at UMD. Nearly 40% of the nursing students and 18% of the engineering students said they "would definitely pursue a degree" at BSU.

Table 10. Community College Students: Preferred Location for Four-Year Program

	If you would attend a college on the range that offered a bachelor's degree program, where would you prefer that it be located?				
	Eveleth	**Grand Rapids**	**Hibbing**	**Virginia**	**Total**
Itasca CC Students	1	94	3	0	98
	1.0%	95.9%	3.1%	.0%	100.0%
Hibbing CC Students	2	7	31	7	47
	4.3%	14.9%	66.0%	14.9%	100.0%
Mesabi CC Students--Virginia	3	0	3	30	36
	8.3%	.0%	8.3%	83.3%	100.0%
Mesabi CC Students--Eveleth	3	1	1	5	10
	30.0%	10.0%	10.0%	50.0%	100.0%
Vermilion CC Students	0	6	2	14	22
	.0%	27.3%	9.1%	63.6%	100.0%
Rainy River CC Students	0	3	1	3	7
	.0%	42.9%	14.3%	42.9%	100.0%
Total	9	111	41	59	220
	4.1%	50.5%	18.6%	26.8%	100.0%

Table 11. Community College Students' Interest in University of Minnesota Duluth, Bemidji State University, Minnesota State University Mankato Degrees in the Mesabi Range Region

Number of community college students who either "would definitely pursue a bachelor's degree" or "would consider pursuing a degree" if the degree could be obtained from the following college by completing that institution's classes at one of the community colleges in the Mesabi Range Region (not all of the 375 respondents answered the three questions):

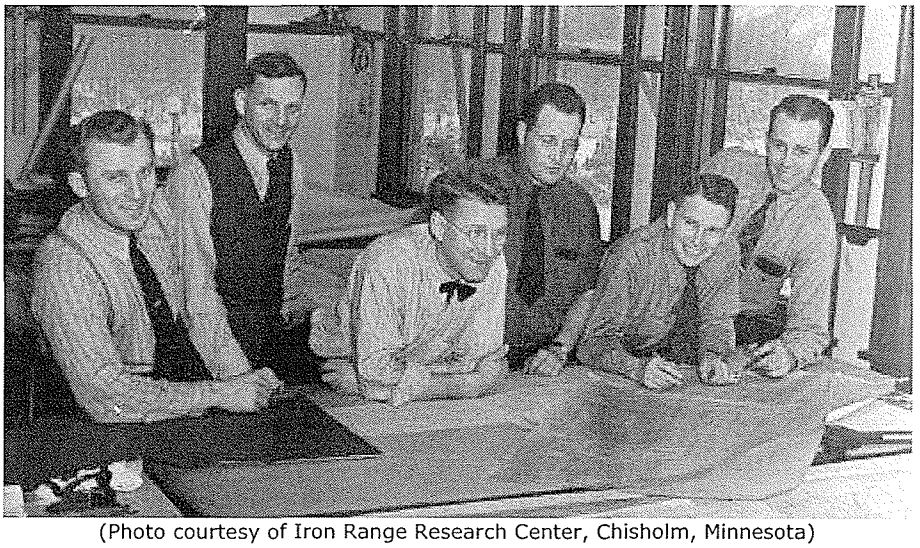
	UMD (n=299)		**BSU** (n=298)		**MSU-Mankato** (n=282)	
	Definitely would attend	Would consider	Definitely would attend	Would consider	Definitely would attend	Would consider
Nursing	26	15	19	23	12	19
	54.2%	31.3%	38.8%	46.9%	26.7%	42.2%
Engineering	11	11	4	13	3	14
	47.8%	47.8%	18.2%	59.1%	14.3%	66.7%
Others	98	101	95	94	45	100
	43.4%	44.7%	42.2%	41.8%	21.0%	46.7%
Total*	135	127	118	130	60	133
	45.5%	42.8%	39.9%	43.9%	21.4%	47.5%

*The total percentages are not meant to equal 100% because each group of students were asked separate questions for each of the three colleges (UMD, BSU and MSU-Mankato) and not shown are the response numbers for "would definitely not pursue a degree."

Area Human Resource Directors (Web-Based Survey)

To gain insight from industry representatives in addition to what was learned from key informant interviews, a select group of human resource directors in the Mesabi Range Region were asked to complete a short web-based survey and nine of them did respond to the survey. Their responses to the questionnaire were mostly in support of expanding higher education opportunities in the Mesabi Range Region. Included among the key findings were the following:

- Seven respondents reported having "some difficulty" in recruiting professional or skilled workers; most of them cited obstacles of location and a shrinking pool in their profession.
- Seven of the respondents held the following views:
  - There is a "great need" for higher education in STEM-related (Science, Technology, Engineering and Math) areas.
  - This higher education "need" justifies four-year programs in the Mesabi Range Region.
  - Four-year programs would be valuable to their company.
- Five respondents think offering a master's degree in the Mesabi Range Region would be "very valuable" to their company.
- All nine of the respondents say they would provide internships/cooperative education experiences to students.



(Photo courtesy of Iron Range Research Center, Chisholm, Minnesota)

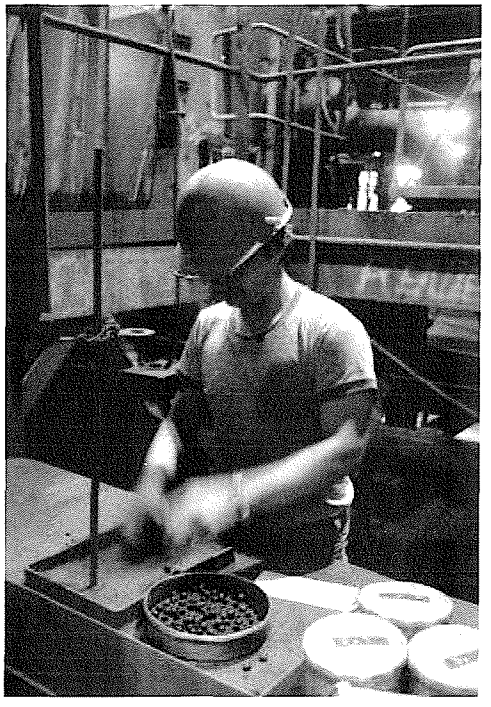
Currently Employed Residents Age 25-50 (Telephone Survey)

As a means of learning about the level of interest among "incumbent" workers in pursuing additional higher education, 300 randomly selected currently employed residents from three of the larger communities in the Mesabi Range Region were targeted in a telephone survey conducted in December 2007. The respondents were

limited to those ranging in age from 25 to 30 and consisted of 100 individuals with a Grand Rapids zip code, 100 with a Hibbing zip code and 100 with a Virginia zip code. Complete tabulated results are provided in Appendix I. Strong support for expanded higher education offerings in the Mesabi Range Region was found among the respondents. Evidence of this support is illustrated by the following key survey findings:

- Two-thirds of the respondents believe there is a need for additional higher education that justifies locating bachelor's and master's degree programs in the Mesabi Range Region.
- 47% say it would be "very valuable" if bachelor's degree programs were offered by a college in the Mesabi Range Region; 23% say "somewhat valuable."
- 40% say it would be "very valuable" if master's degree programs were offered by a college in the Mesabi Range Region; 28% say "somewhat valuable."
- 16% say it is "very likely" they would attend if bachelor's and/or master's degree programs offered at one of the community colleges in the Mesabi Range Region.
- 40% (121) of the respondents have a high school education or less; 29% have a two-year associate of arts degree as their highest degree; and 31% have at least a bachelor's degree.
- 12% say they would like to obtain a bachelor's degree; 5% would like to obtain a master's degree; and 28% were not sure.
- Interest for additional education was indicated in the following majors: 10 nursing, 6 healthcare, 6 engineering, 15 business, 13 education, 6 IT/computer-related, 5 psychology.

When asked to indicate their preference for the location for bachelor's or master's degree programs if offered at one of the community colleges in the Mesabi Range Region, the respondents were evenly divided among Grand Rapids, Hibbing and Virginia. However, when sorted by the community in which they were living, not all of the respondents preferred the community in which they resided. In fact, while 76-78% of them preferred a location within their own community, the remaining 22-24% of respondents indicated one of the other communities as their preference (Table 12).



(photo courtesy of Iron Range Research Center)

Table 12. Incumbent Workers' Preferred Location for Bachelor's/Master's Degree Programs

Community in which residing	If bachelor's and/or master's degree programs were to be offered at one of the community colleges in the Mesabi Range Region, where would you prefer that they be located?				
	Eveleth	Grand Rapids	Hibbing	Virginia	Total
Grand Rapids	2	76	14	8	100
	2.0%	76.0%	14.0%	8.0%	100.0%
Hibbing	1	8	78	13	100
	1.0%	8.0%	78.0%	13.0%	100.0%
Virginia	0	13	9	78	100
	.0%	13.0%	9.0%	78.0%	100.0%
Total	3	97	101	99	300
	1.0%	32.3%	33.7%	33.0%	100.0%

High School Seniors Likely to Pursue STEM-Related (Science, Technology, Engineering and Mathematics) Careers (Paper Survey)

An important aspect of the study was a survey of high school students in the Mesabi Range Region to learn about their educational aspirations and perceptions (Table 13). To accomplish this component of the research, paper surveys were delivered to administrators at 14 high schools in the Mesabi Range Region; these administrators were asked to disseminate the questionnaires to students in classes typically geared

Table 13. High Schools Participating in Survey

High School	Respondents
Grand Rapids	52
Eveleth/Gilbert	37
Nashwauk/Keewatin	37
Virginia	34
Hibbing	33
Cook	32
Mesabi East	21
Big Fork	17
Orr	15
Greenway	14
Chisholm	12
Albrook	11
Ely	8
Mt. Iron/Buhl	7

toward seniors who might be likely to pursue a four-year degree in STEM-related (Science, Technology, Engineering or Mathematics) or healthcare-related areas. Respondents to the survey included 330 students attending 14 high schools in the Mesabi Range Region.

Complete tabulated survey results for the high school student survey are provided in Appendix J. With nearly all of the respondents indicating plans to attend college, nearly a third of them (31%) said having a bachelor's degree offered by a college in the Mesabi Range Region would be "very valuable." A large majority of the high school seniors (86%) said a college having a desired program is "very important" in their college selection process. Among the other key findings were the following:

- All but six of the students plan to attend college next fall, specifically –
  - 55% plan on four-year college
  - 27% plan on community college
  - 18% not sure of which college
- The highest degree students want to attain: 36% bachelors, 30% master's, 4% law, 11% MD, 9% Ph.D.
- 27 students (8.2%) say they plan to major in engineering, 21 plan to major in nursing, 26 in pharmacy, 36 in other medical-related, 8 in forestry/natural resources.
- 21% (66) say if a bachelor's degree were available at one of the community colleges in the Mesabi Range Region, they would attend that college; 39% say they are "not sure" if they would attend.
  - Preferred location for those saying they would attend a local college:
    - Virginia 37% (23)
    - Hibbing 33% (21)
    - Grand Rapids 21% (13)
    - Eveleth 10% (6)
- 15% say closeness to home is "very important" in the college selection process, 54% "somewhat important."
- 58% say cost savings is "very important" in the college selection process, 39% say it is "somewhat important."
- Of those with plans to attend a four-year college (153 responded):
  - 15% (23) plan on University of Minnesota Duluth
  - 10% (15) College of St. Scholastica
  - 10% (15) University of Minnesota Twin Cities
  - 7% (10) Bemidji State University
  - 7% (10) University of North Dakota
  - 4% (6) St. Cloud State University
- Of those with plans to attend a community college (n=86):
  - 33% (28) plan on Hibbing CC
  - 22% (19) Itasca CC
  - 20% (17) Mesabi CC – Virginia
  - 9% (8) Mesabi CC – Eveleth

- Of those with plans to attend a community college, 58% plan to transfer and 19% are "not sure"; transfer college plans include:
  - 23% (10) BSU
  - 16% (7) UMD
  - 14% (6) UND
- 29% of all respondents (92) say they would like to live in the Mesabi Range Region after college; 49% are "not sure."
- 48% think jobs related to their academic program will be available in the Mesabi Range Region after they complete college.

High School Graduating Class of 2007: Engineering as Planned Major on ACT

Table 14 below presents the percentage of high school students who indicated engineering as their planned college major when they completed the ACT Student Profile. Students from Itasca and St. Louis Counties were included in the analysis since these two counties cover a considerable portion of the Mesabi Range Region; Anoka and Hennepin Counties were included to compare students from the Mesabi Range Region with students from two counties in the Twin Cities metropolitan area. The data show that for those students in the graduating class of 2007 who completed the ACT, the percentage who indicated engineering as a planned major varied only slightly (from 2.67% - 4.26%), with Itasca and St. Louis Counties having higher percentages of students planning to major in engineering than Anoka and Hennepin Counties.

Table 14. Students Indicating Engineering as Major on ACT

County	Total N	Engineering Majors	Engineering Majors as % of Total
Itasca	282	12	4.26%
St. Louis	1284	41	3.19%
Anoka	380	69	2.86%
Hennepin	9110	243	2.67%

(Source: ACT, Iowa City, IA)

UMD, UMTC Freshmen Enrolled in Engineering

Twenty of the freshmen enrolled in engineering during the fall of 2007 at the University of Minnesota Duluth were from the northeast Minnesota region including Koochiching, Itasca, Aitkin, Carlton, St. Louis, Lake and Cook counties; 89 freshmen were from the Metro region that includes Anoka, Washington, Ramsey, Dakota, Hennepin, Scott and Carver counties; and 40 freshmen were from "other" Minnesota counties (see Table 15). Of the 75 freshmen enrolled in Engineering at Itasca Community College, 45 were from northeastern Minnesota counties. Data on University of Minnesota Twin Cities freshmen

were not provided since students majoring in engineering are aggregated in the Institute of Technology, which includes several non-engineering majors.

Table 15. Engineering Freshmen Enrolled at UMD and ICC, Fall 2007

ENGINEERING MAJOR	U OF M DULUTH FRESHMEN (Fall 2007)					ITASCA COMMUNITY COLLEGE (Fall 2007)				
	NE	Metro	Other MN	Out of St.	Total	NE	Metro	Other	Out of St.	Total
Engineering						45	5	23	2	75
Bio-Based Prod.										
Chemical	4	21	7	6	32					
Electrical										
Electr/Computer	10	23	8	4	41					
Industrial	0	5	4	1	9					
Mechanical	3	32	12	7	47					
Pre Aerospace	0	0	1		1					
Pre Civil	1	2	1	2	4					
Pre Engineering	2	6	7	1	15					
Total	**20**	**89**	**40**	**21**	**170**	**45**	**5**	**23**	**2**	**75**

(Source: Office of Institutional Research, University of Minnesota Twin Cities, & Ron Ulseth, Engineering Dept., Itasca Community College)

2007 NHED Community College Engineering Graduates: Where Enrolled

Two-thirds of the 35 students who graduated from Itasca Community College's Engineering program in 2007 are currently enrolled at the University of North Dakota in Grand Forks (see Table 16). Of the other 12 graduates, four are enrolled at Minnesota State University Mankato, three are at the University of Minnesota Twin Cities, two are attending the University of Minnesota Duluth, two are at Michigan Tech and one is enrolled at St. Thomas University. Of the 19 students graduating in Mechanical Engineering, 12 of them are enrolled at the University of North Dakota. Hibbing Community College graduated seven engineering students, with four now

Table 16. Itasca Community College Engineering Graduates, Spring 2007

ENGINEERING MAJOR	CURRENT PLACE OF ENROLLMENT FOR 2007 ITASCA CC ENGINEERING GRADUATES						
	Univ. of North Dakota	MSU Mankato	U of M Twin Cities	U of M Duluth	Mich. Tech.	St. Thomas	Total
Auto. Engr. Tech.		2					2
Chemical	1						1
Civil	5						5
Electrical	5	2	1				8
Mechanical	12		2	2	2	1	19
Total	**23**	**4**	**3**	**2**	**2**	**1**	**35**

(Source: Ron Ulseth, Engineering Dept., Itasca Community College)

enrolled in Mechanical Engineering at UMD and three at the U of M Twin Cities (one enrolled in Civil Engineering and the other two in non-engineering majors).

Minnesota Students Graduating in Engineering from the University of Minnesota Duluth and University of Minnesota Twin Cities, Spring 2007

Below is a table presenting the number of native Minnesotans who graduated in engineering from the University of Minnesota (Duluth and Twin Cities) in the spring of 2007, sorted by their home county (Table 17). The Northeast region includes Koochiching, Itasca, Aitkin, Carlton, St. Louis, Lake and Cook counties; the Metro region includes Anoka, Washington, Ramsey, Dakota, Hennepin, Scott and Carver counties; and all other Minnesota counties are group under "other." The data show that 13 students from northeastern Minnesota graduated from an engineering program at the University of Minnesota Duluth and nine from a University of Minnesota Twin Cities engineering program.

Table 17. Minnesota Engineering Graduates from UMD and UMTC, 2007

ENGINEERING MAJOR	U OF M DULUTH GRADUATES (Spring 2007)				U OF M TWIN CITIES GRADUATES (Spring 2007)			
	NE	Metro	Other MN	Total	NE	Metro	Other MN	Total
Aerospace					2	12	13	27
Bio-Based Prod.					0	1	0	1
Biomedical					1	20	8	29
Biosystems/Agri					1	3	0	4
Chemical	6	6	1	13	2	32	6	40
Civil					2	34	15	51
Computer					0	11	1	12
Electrical					0	39	13	52
Electrical/Computer	1	5	5	11				
Industrial	1	2	2	5				
Geological					0	2	1	3
Mechanical	5	10	4	19	1	46	20	67
Total	**13**	**23**	**12**	**48**	**9**	**200**	**77**	**286**

(Source: Office of Institutional Research, University of Minnesota)

The data presented in Tables 14-17 indicate a relatively high interest and participation rate of Mesabi Range Region students in engineering fields, with many of them staying close to home at the University of Minnesota Duluth or Itasca Community College. One statistic that speaks to "lost opportunity" is that two-thirds of the 2007 engineering students from Itasca Community College transferred out of state to the University of North Dakota. Overall, the data in this study that is related to student interest and preferences in higher education suggest that there are unmet educational needs in the Mesabi Range Region. This in itself provides incentive to explore new and expanded programs in the region.

SUMMARY AND RECOMMENDATIONS

Students, educators and industry representatives were very much engaged in providing feedback for this study. Whether the feedback came from web-based surveys or from in-person conversations, the information collected was instrumental in helping clarify the higher education needs and demands in the Mesabi Range Region. Particular attention was paid to identifying current and potential future gaps in providing higher education undergraduate and graduate programs that will support key industries and economic vitality in the Mesabi Range Region. It is recognized that this study has been limited in scope to researching student demand and employer needs and was not tasked with conducting a cost/benefit analysis during its short timeframe of three months.

The level of engagement by those contributing feedback included the unsolicited submission by some individuals of proposals supporting expanded learning options in the Mesabi Range Region. For example, as an unintended consequence of the study, a proposal was recently presented to the research team by key leaders at the UMD's Natural Resources Research Institute (NRRI) entitled "Forestry Initiative – Degree Programs on the Iron Range" (see Appendix K). The proposal outlines NRRI's position that "Additional consideration should be natural resources and forest management programs."

Below is a list of recommendations that spell out with some specificity the assessment of the research team charged with developing "alternatives and recommendations on how regional educational needs can be met by the University of Minnesota Duluth, Minnesota State Colleges and Universities, or joint degree programs." As presented in the project description, this study was undertaken to accomplish the following:

- Identify current and potential future gaps in providing higher education undergraduate and graduate programs that will support key industries and economic vitality in the Mesabi Range region.
- Conduct market research to identify the current and future demand for undergraduate and graduate education in the region.
- Develop alternatives and recommendations on how regional educational needs can be met by the University of Minnesota Duluth, Minnesota State Colleges and Universities, or joint degree programs.

Given these directives, findings from the study suggest the following recommendations (which are grouped under four headings):

On-Site Course Delivery

1. It is recommended that a physical presence be established with educational classrooms, laboratories and faculty/staff offices sufficient to accommodate students wishing to complete four-year and post-graduate degree programs in the Mesabi Range Region, particularly focused on engineering/engineering

technology-related disciplines utilizing innovative approaches. These programs should include both stand-alone programs and joint programs such as those in the early stage of development, including Bemidji State University's Engineering Technology and Applied Engineering programs and the University of Minnesota Duluth's Civil Engineering emphases (Geotechnical/ Mining Engineering, Structural Engineering, Water Resources Engineering and Transportation Engineering.) Other potential program offerings could include Manufacturing Engineering Technology and Electrical Engineering Technology currently available through Minnesota State University Mankato. The opportunity also exists to build on unique community college programs such as Itasca Community College's innovative Engineering Program that incorporates Project Based Learning, an Engineering Learning Community and an Integrated Learning Laboratory.

The rationale for this key recommendation is as follows:

Based on information collected during the three-month study period and then analyzed and distilled into an organized interpretation, the research team believes there is sufficient student demand and employer need to suggest the expansion of four-year and graduate-level program offerings in the Mesabi Range Region. Study findings also suggest a focus on those areas that have particular relevance to the Mesabi Range Region, including engineering/engineering technology, mining-related technology, energy production, national resources management, and forestry research. With newly developed programs in Engineering Technology and Applied Technology at Bemidji State University and the University of Minnesota Duluth's Civil Engineering emphases (Geotechnical/Mining Engineering, Structural Engineering, Water Resources Engineering and Transportation Engineering), it would seem that a natural extension of these programs could be established in an academic setting in the Mesabi Range Region, which has significant industry connections directly related to these programs.

Research completed in November 2007 by a study group jointly sponsored by the Arrowhead University Consortium and Minnesota State University Mankato's Extended Learning and the Minnesota Center for Engineering & Manufacturing Excellence concluded, "There is need for more, well-trained Engineers and Engineering Technologists in business and industry in Northeast Minnesota....The job outlook...is good in the region and while there is a positive pre-disposition for baccalaureate degrees among educators, they do not necessarily believe that current high school students seek the degree for jobs within the region" (Needs Assessment Research Final Report; presented to Minnesota State University Mankato Extended Learning; November 16, 2007). While a relatively small-scale study, the research included a review of existing information and two web-based surveys involving small numbers of educators (11) and business/industry people (13) in northeast Minnesota.

In the current study, marketing research gathered from a variety of sources, i.e., current high school seniors, community college students, incumbent workers, human resource directors, and industry representatives, suggest a level of interest in STEM-

related programs (particularly engineering) to warrant further development of four-year and graduate-level program offerings on site at one of the community colleges in the Mesabi Range Region. For example, more than one of every five high school seniors surveyed said that if a bachelor's degree were available at one of the community colleges in the Mesabi Range Region, they would attend that college, and nearly two in five students indicated "not sure" regarding whether or not they would attend. More than half of the high school students who plan to major in engineering (14 of 26 total) indicated they would either attend or consider attending one of the community colleges if a bachelor's degree were available (see Appendix J, Table 15). It should be noted that the survey included only 330 of the high school seniors at 14 high schools in the Mesabi Range Region (the expected graduating class size of the 14 high schools is approximately 1100 students).

One of the more insightful findings from the survey of community college students is that those students who indicated being unsure as to whether or not they would transfer to a four-year college were far more likely to rate "closeness to home" as being "very important" in their transfer decision-making process, compared to those students with definite plans to transfer (Table 12, Appendix H). Similarly, nearly two-thirds of the unsure students (compared to fewer than a third of the students with definite transfer plans) consider "ability to stay with family while attending college" to be "very important" in deciding whether or not they will continue their education by transferring to a four-year college (Table 13, Appendix H). Having a more locally situated site for the last two years of a four-year program would in all likelihood provide greater potential for these "unsure" students to enroll in a four-year program, stay close to home and possibly stay with family while in college.

Among the research findings is that more than half (53%) of the community college students and nearly three out of ten high school seniors say they would like to live in the Mesabi Range Region after graduating from college (nearly a third of the community college students indicated being "not sure" about living in the Mesabi Range Region after college and only 16% said they would not like to reside there). This supports input from many of the key informant interviewees who said that young people growing up in the Mesabi Range Region have strong ties to the region and would like to remain in the Mesabi Range Region.

Additionally, the role of higher education as a major catalyst and driver of economic development is well established – be it through raising educational levels to create a quality workforce, providing lifelong learning opportunities for workers, working with business and industry in addressing immediate and long-term training and technology needs and concerns, and disseminating research and promoting technology transfer. These tenets of a long-range economic development strategy were reinforced by members of the United Steel Workers Union who expressed both the desire and need for a four-year program located in the region to increase safety and productivity in the mines and serve as a magnet for both local and non-locals to get an education, a quality job and provide a positive impact on the quality of life in the region. Offering four-year and graduate programs also serves as an incentive and encouragement for industries to locate more of their business activities in the Mesabi Range Region. The critical role of higher education will increase as further

changes in technology, globalization, and demographics impact the Mesabi Range Region (and the United States). To remain competitive in light of these changes, the Mesabi Range Region will need to improve productivity and address the growing need for technology solutions to provide a competitive advantage. Higher education delivers the capacity, knowledge, and research needed to help achieve these goals.

2. It is recommended that an Arrowhead University facility focused on the delivery of four-year and graduate-level programs be conveniently located at a community college in the Mesabi Range Region allowing ready access from all Northeast Higher Education District sites. Such a site should take into consideration all of the potential educational, research and economic development opportunities associated with mining/technology, natural resources, energy production and forestry from Grand Rapids to Ely and International Falls to Duluth. The rationale regarding the delivery of expanded academic and research programs at a centrally located site would support the location of a centrally located facility in a community such as Virginia, where Mesabi Range Community and Technical College is located.

3. It is recommended that the University of Minnesota Duluth establish a physical presence at the site to assist in the development of academic program offerings in the Mesabi Range Region.

Organization and Structure

4. It is recommended that Arrowhead University, expanding capacity beyond that of the current Arrowhead University Consortium, serve as the institution that facilitates the expansion of current and new four-year and graduate programs during a potential transition to a permanent four-year site in the Mesabi Range Region.

5. It is recommended that Arrowhead University's central administration be housed at the site selected to host any expanded program offerings.

6. It is recommended that a transportation system be developed to accommodate student mobility among the five community college campuses. While not specifically mentioned during focus groups and key informant interviews, this recommendation is based on survey input indicating most community college and prospective students would prefer that a four-year site be located in the community in which they currently reside. A good bus transportation system would provide students with more options in getting to their classes, regardless of where the site is located in the Mesabi Range Region.

Academic Programming and Blended Delivery Models

7. It is recommended that Arrowhead University consider the expansion of existing distance delivery partnerships to all four-year MNSCU (Minnesota State Colleges and Universities) institutions, the University of Minnesota Duluth and private higher education institutions.

While the majority of this study was focused on academic programs, input from post-secondary educators indicated that dedicated lab space would be needed to accommodate any expansion of engineering-related programs in the Mesabi Range Region. As described in the research findings, current community college students were most receptive to on-site in-person instruction, but expressed a willingness to receive instruction through other means. A variety of blended educational delivery models are either currently in place or have been attempted in the Mesabi Range Region, involving web-based learning, interactive video, and on-site instruction with student cohorts. Continuation of some of these blended delivery models should be considered as a way to facilitate both new and existing programs in non-STEM related areas.

8. It is recommended that graduate-level programs related to the Mesabi Range Region be established in cooperation with existing programs within the University of Minnesota and MNSCU (Minnesota State Colleges and Universities). Such programs should be relevant to the region's unique geographical and geological setting (i.e., engineering, geology, natural resources (including water resources), forestry management, and energy technology). Existing graduate-level program offerings should continue to be part of the higher education mix. The research indicated support for expanded graduate programs from all groups studied, including current community college students, prospective high school students, incumbent workers and industry representatives.

Industry-Focused Learning

9. It is recommended that all educational options include close connection to the world of work, particularly related to the mining and energy industries and to the natural resources field. This recommendation is based on feedback from both industry representatives and educators such as Ron Ulseth (head of Itasca Community College's Engineering program), who explained there are many advantages in the learning process if students are in close proximity to real work settings, which afford them the opportunity to have hands-on experience connecting their classroom experience to the laboratory – in this case workplaces in the Mesabi Range Region.

10. It is recommended that UMD's Natural Resources Research Institute (NRRI) establish an office within Arrowhead University to assist with the development of four-year and graduate-level academic curricula specifically focused on their research related to natural resources, forestry management and mining technology. With limited space for students to be involved in laboratory and classroom activity at NRRI's Coleraine research site, lab space at the Arrowhead University location would need to be designed to accommodate both student hands-on learning and NRRI research used in a learning modality.

11. It is recommended that a Range Knowledge and Applied Research Corridor (RKARC) under the auspices of Arrowhead University be developed to facilitate cooperative opportunities for post-secondary education, funded research, high-

tech economic development, industry-related technology transfer, entrepreneurship, student internships and high-level science ventures (such as the neutrino research currently underway at the Soudan State Park Underground Mine).

Marketing

12. It is recommended that any development of expanded academic offerings include sufficient marketing support.

Because of a lack of precision in predicting actual student enrollment behavior, as well as in predicting future events that could impact enrollment, projected enrollment numbers were not a practical outcome of this study. An important variable in enrollment is the extent to which programs are marketed. Quality, well-funded marketing would be an essential component in the successful expansion of any academic programs. Additionally, for specialized academic programs with unique components or work/internship opportunities, the actual geographical marketing area could likely be extended well beyond the Mesabi Range Region, drawing prospective students from a much larger base. To make expanded student recruitment an intentional and planned activity would require even more support in the area of marketing.

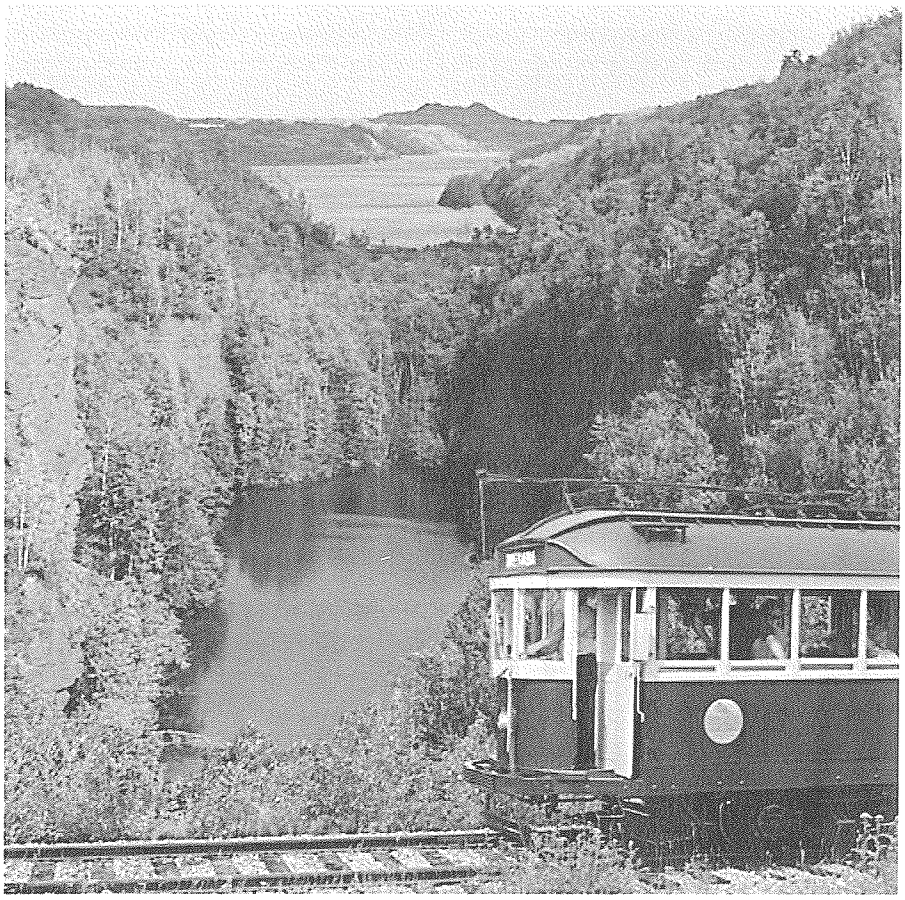
Related Considerations

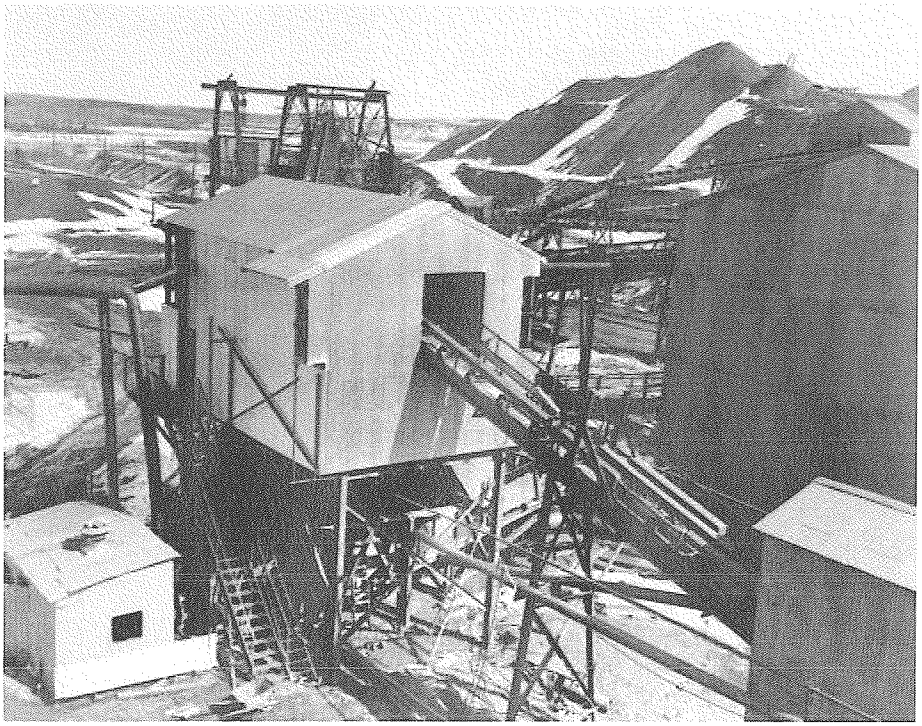
Healthcare programs were frequently brought up during the study but, generally, were not considered for expanded academic programming. However, within this area, nursing was found to be a discipline where students, particularly second-year RN students at Hibbing Community College, did express an interest in having the last two years of a four-year nursing program located in the Mesabi Range Region. While this study did not reveal sufficient findings to warrant an on-site presence for an expanded nursing program, additional research may be justified.

In general, given the potential for population growth, there could be any number of academic programs that could be expanded naturally as a result of increased enrollments at the community colleges.

Concluding Remarks

Finally, it is recognized that while the scope of this study was somewhat limited, the assessment of student demand and employer need is a key consideration in making a decision regarding the possible expansion of four-year and graduate programs in the Mesabi Range Region. From many discussions, interviews and focus group meetings, the message has been conveyed and accepted that the Mesabi Range Region is on the brink of exciting economic growth opportunities that would be enhanced with the expansion of post-secondary opportunities. The results of this study suggest that there is both a need for and an interest in the expansion of higher education. It is anticipated that additional discussion will determine the means by which these enhancements should be or can be accommodated.





(Photo courtesy of Ironworld Discovery Center)

APPENDIX A. Community College Student Questionnaire

Iron Range Higher Education Needs Assessment

Graduating Community College Student Survey: Post-Secondary Plans

This survey is part of a study to assess educational needs and interests of community college students living in the Mesabi Range Region of Minnesota. Individual results of this survey are confidential and anonymous. Please respond to each item in the survey as directed.

1. What community college are you enrolled at?
    1) ___Itasca Community College
    2) ___Hibbing Community College
    3) ___Mesabi Range Community & Technical College – Virginia
    4) ___Mesabi Range Community & Technical College – Eveleth
    5) ___Vermillion Community College
    6) ___Rainy River Community College

2. Do you plan to graduate this academic year?
    1) ___yes
    2) ___no

3. What major or area of study are you pursuing?
    1) ___Nursing
    2) ___Engineering
    3) ___Criminal Justice
    4) ___Liberal Arts
    5) ___Business Administration
    6) ___Other:_____

4. What is the highest post-secondary degree you would eventually like to attain?

    1) ___None
    2) ___Two-year associate degree
    3) ___Four-year bachelor's degree
    4) ___Master's degree
    5) ___Law degree
    6) ___MD (medical doctor)
    7) ___PhD

5. Do you plan to transfer to a four-year college after graduating from the community college?
    1) ___Yes; if yes, which one?
        1. ___Bemidji State University
        2. ___University of Minnesota Duluth
        3. ___College of St. Scholastica
        4. ___St. Cloud State University
        5. ___University of Minnesota – Twin Cities
        6. ___University of North Dakota
        7. ___Minnesota State University Mankato
        8. ___Other – Please indicate:
        _____

2) ___No; if no, why not? (check all that apply)
   1. ___I do not need additional education for my career plans
   2. ___I can not afford additional education
   3. ___I do not want to leave the Iron Range
   4. ___Other:_____
3) ___Not sure

6. How important was each of the following in making a decision on which college to transfer to, or whether or not to transfer to a four-year college?

(please check your response)

	Very Important	Somewhat Important	Not Important
1) Has my preferred academic program			
2) Quality academic program			
3) Closeness to home			
4) Ability to stay with family while attending college			
5) Cost savings			
6) Convenience			
7) Large school size			
8) Small school size			
9) Other:			

7. Please rank the importance of the availability of internships or co-ops in your subject area:
   1)___very important
   2)___somewhat important
   3)___not at all important

8. How valuable would it be to you if a bachelor's degree were to be offered by a college on the Iron Range?
   1)___very valuable
   2)___somewhat valuable
   3)___not at all valuable

9. If a bachelor's degree program were available at one of the community colleges on the Iron Range, would you attend that college?
   1) ___Yes;

   2) ___No; if no, why would you not attend? (check all that apply)
      1. ___I would prefer attending another four-year college elsewhere
      2. ___I do not need additional education for my career plans
      3. ___I would not be able to afford it
      4. ___I would be concerned about the quality of the program
      5. ___Other:_____

   3) ___Not sure; it depends on:
      1. ___Which academic programs are offered
      2. ___The city in which the program is located
      3. ___Other:_____

10. If you answered "yes" to question 9, where would you prefer the bachelor's degree program be located?
(check only one)
1) ___Eveleth
2) ___Grand Rapids
3) ___Hibbing
4) ___Virginia

11. What is your level of interest in obtaining a bachelor's degree from one of the following colleges if you could complete that institution's classes at one of the community colleges on the Iron Range?

	Would definitely pursue a degree	Would consider pursuing a degree	Would definitely not pursue a degree
1) University of Minnesota Duluth			
2) Minnesota State University Mankato			
3) Bemidji State University			

12. After completing college, would you like to reside on the Iron Range?
1) ___Yes
2) ___No
3) ___Not sure

13. After completing college, do you think employment related to your academic program would be available on the Iron Range?
1) ___Yes
2) ___No
3) ___Not sure

14. If you are planning to transfer, what major or area of study do you plan to pursue at the transfer college?_____

15. Which graduate level programs would be a natural "fit" to make available to students on the Iron Range?_____

APPENDIX B. High School Student Questionnaire

Iron Range Higher Education Needs Assessment

Sponsored by RAMS (Range Association of Municipalities and Schools), Minnesota State College and University System, and University of Minnesota Duluth

High School Student Survey: Post-Secondary Plans

This survey is part of a study commissioned by the Minnesota State College and University System to assess educational needs and interests of students and potential students living in the Mesabi Range Region of Minnesota. Individual results of this survey are confidential and anonymous. Please respond to each item in the survey as directed.

1. Which high school are you currently attending?

1) ___Eveleth/Gilbert
2) ___Virginia
3) ___Mt Iron/Buhl
4) ___Chisholm
5) ___Hibbing
6) ___Nashwauk/Keewatin
7) ___Greenway
8) ___Grand Rapids
9) ___Big Fork
10) ___Ely
11) ___Albrook
12) ___Babbitt/Embarrass
13) ___Cherry
14) ___Cotton
15) ___Cook
16) ___Orr
17) ___Tower/Soudan
18) ___Mesabi East

2. Are you currently taking classes at a community college as a PSEO (Post-Secondary Educational Opportunity) student?

19) ___No
20) ___Yes, if yes, where?
    1. ___Itasca Community College
    2. ___Hibbing Community College
    3. ___Mesabi Range Community & Technical College – Virginia
    4. ___Mesabi Range Community & Technical College – Eveleth
    5. ___Vermillion Community College

3. What is the highest college degree you would eventually like to attain?
    a. ___None
    b. ___Two-year associate degree
    c. ___Four-year bachelor's degree
    d. ___Master's degree
    e. ___Law degree
    f. ___MD (medical doctor)
    g. ___PhD

4. Are you planning to attend college next fall?
    a. ___Yes
    b. ___Not sure
    c. ___No – if no, do not continue with the rest of the survey.

5. What major or area of study do you plan to pursue in college?_____

6. How important is each of the following in your college selection?

(please check your response)

	Very Important	Somewhat Important	Not Important
1) Has my preferred academic program			
2) Quality academic program			
3) Closeness to home			
4) Ability to stay with family while attending college			
5) Cost savings			
6) Convenience			
7) Large school size			
8) Small school size			
9) Other:			

7. Where do you plan to enroll next fall?
   a. ___Community college (proceed to Question 8)
   b. ___Not sure (skip to Question 10)
   c. ___Four-year college; which one? (please check one; then skip to Question 10)
      i. ___Bemidji State University
      ii. ___University of Minn. Duluth
      iii. ___College of St. Scholastica
      iv. ___St. Cloud State University
      v. ___University of Minnesota
      vi. ___University of North Dakota
      vii. ___MSU Mankato
      viii. ___Other:_____

8. At which community college do you plan to enroll?
   a. ___Itasca Community College
   b. ___Hibbing Community College
   c. ___Mesabi Range Community & Technical College – Virginia
   d. ___Mesabi Range Community & Technical College – Eveleth
   e. ___Vermillion Community College
   f. ___Rainy River Community College
   g. ___Northwest Technical College – Bemidji
   h. ___Lake Superior College
   i. ___Other: _____

9. Do you plan to transfer to a four-year college after attending the community college?
   1) ___Yes; if yes, which one?
      1. ___Bemidji State University
      2. ___University of Minnesota Duluth
      3. ___College of St. Scholastica
      4. ___St. Cloud State University
      5. ___University of Minnesota – Twin Cities
      6. ___University of North Dakota
      7. ___MSU Mankato
      8. ___Other: _____

2) ___No; if no, why not? (check all that apply)
   a. ___I do not need additional education for my career plans
   b. ___I can not afford additional education
   c. ___I do not want to leave the Iron Range
   d. ___Other:_____
3) ___Not sure

10. How valuable would it be to you if a bachelor's degree were to be offered by a college on the Iron Range?
    1)___very valuable
    2)___somewhat valuable
    3)___not at all valuable

11. If a bachelor's degree program were available at one of the community colleges on the Iron Range, would you attend that college?
    a. ___Yes
    b. ___No; if no, why not? (check all that apply)
       1. ___I would prefer attending a four-year college elsewhere
       2. ___I do not need additional education for my career plans
       3. ___I would not be able to afford it
       4. ___I would be concerned about the quality of the program
       5. ___Other:_____
    c. ___Not sure; it depends on:
       1. ___Which academic programs are offered
       2. ___The city in which the program is located
       3. ___Other:_____

12. If you answered "yes" to Question 11, where would you prefer the bachelor's degree program be located?
    (check only one)
    a.___Eveleth
    b.___Grand Rapids
    c.___Hibbing
    d.___Virginia

13. After completing college, would you like to reside on the Iron Range?
    a. ___Yes
    b. ___No
    c. ___Not sure

14. After completing college, do you think employment related to your academic program would be available on the Iron Range?
    a. ___Yes
    b. ___No
    c. ___Not sure

APPENDIX C. Incumbent Workers Questionnaire

Minnesota Iron Range Higher Education Survey

Audience:
Currently employed individuals age 25-50:
100 from Grand Rapids
100 from Hibbing
100 from Virginia ID#:_____
Community:_____
Screening question:
We're conducting a very short survey to help determine the educational needs of residents in the Mesabi Range Region. If you are between the ages of 25 and 55 we would like to ask you a few questions.

Are you currently employed? (if not, ask if there is someone else in the household who is employed and age 25-50 —if there is no one thank them for their time and discontinue survey)

1. Can you tell me your age? _____
   (if age 25-50 continue with survey;
   if not in the age category, ask if there is someone else in the household age 25-50 —if there is no one thank them for their time and discontinue survey)

2. How many years have you resided in your community? _____

3. What is the highest academic diploma or degree you have earned?
   21) ___high school diploma or less
   22) ___Two-year associate degree
   23) ___Four-year bachelor's degree
   24) ___Master's degree
   25) ___Law degree
   26) ___MD (medical doctor)
   27) ___PhD

4. Have you attended any of the community colleges located on the Iron Range?
   a. ___yes; if yes, which one?
      i. ___Itasca Community College
      ii. ___Hibbing Community College
      iii. ___Mesabi Range Community & Technical College – Virginia
      iv. ___Mesabi Range Community & Technical College – Eveleth
      v. ___Vermillion Community College
      vi. ___Rainy River Community College
   b. ___no

5. Are you currently taking any classes at one of the community colleges?
   a. ___yes
   b. ___no

6. Please select a response that reflects your future educational plans:
   (can respond to more than one)
   a. ___I would like to obtain a bachelor's degree
   b. ___I would like to obtain a master's degree
   c. ___I have no interest in obtaining a bachelor's or master's degree (skip to question 8)
   d. ___I am not sure at this time if I would like to continue my education

7. If you would like to continue your college education, what major or area of study would you be most interested in?_____

8. Do you believe there is a need for additional higher education that justifies locating bachelor and master degree programs on the Iron Range?
   a. ___Yes
   b. ___No
   c. ___Not sure or don't know

9. How valuable would it be to you if bachelor's degree programs were to be offered by a college on the Iron Range?
   1)___very valuable
   2)___somewhat valuable
   3)___not at all valuable

10. How valuable would it be to you if master's degree programs were to be offered by a college on the Iron Range?
   1)___very valuable
   2)___somewhat valuable
   3)___not at all valuable

11. If bachelor's and/or master's degree programs were to be offered at one of the community colleges on the Iron Range, where would you prefer they be located?
   (indicate only one)
   a. ___Eveleth
   b. ___Grand Rapids
   c. ___Hibbing
   d. ___Virginia

12. If bachelor's and/or master's degree programs were available at one of the community colleges on the Iron Range, how likely would it be that you would attend that college?
   1)___very likely
   2)___not sure
   3)___very unlikely

13. Which graduate level programs would be a natural "fit" to make available to students on the Iron Range?_____

APPENDIX D. Human Resource Directors Questionnaire

Iron Range Higher Education Study

Human Resource Directors Survey: Employee Higher Education Needs

This survey is part of a study to assess educational needs and interests of currently employed individuals living in the Mesabi Range Region area of Minnesota. Individual results of this survey are confidential and anonymous. Please respond to each item in the survey as directed.

1. How many employees do you have working for your company?
   28)___1-9
   29)___10-29
   30)___30-99
   31)___100 or more

2. What specific skill sets do you most need in professional and skilled positions?

3. How would you describe your company's level of success in recruiting professional and skilled positions?
   a. ___Very successful
   b. ___We have some difficulty in attracting qualified employees in these areas
   c. ___We have great difficulty in attracting qualified employees in these areas

4. What are the major obstacles in attracting or retaining professional and skilled employees?

5. For each of the academic areas listed below, please indicate your perception of the level of need for additional higher education among currently employed residents of the Iron Range:

(please check your response)

	Great Need	Limited Need	No Need
1) Engineering			
2) Science and Math			
3) Technology			
4) Healthcare			

6. Do you believe residents' need for additional higher education justifies locating four-year degree programs on the Iron Range?
   a. ___Yes
   b. ___No
   c. ___Not sure

7. How valuable would it be to you if bachelor's degree programs were to be offered by a college on the Iron Range?
   1)___very valuable
   2)___somewhat valuable
   3)___not at all valuable

8. How valuable would it be to you if master's degree programs were to be offered by a college on the Iron Range?
    1)___very valuable
    2)___somewhat valuable
    3)___not at all valuable

9. If bachelor's and/or master's degree programs were to be offered at one of the community colleges on the Iron Range, where would you prefer they be located?
    (check only one)
    a. ___Eveleth
    b. ___Grand Rapids
    c. ___Hibbing
    d. ___Virginia

10. Would your company be willing to offer additional cooperative work experiences or internship opportunities to students who might be pursuing a bachelor's degree?
    a. ___Yes
    b. ___No

APPENDIX E. Community College Student Focus Groups

Student Questionnaire

1. What is your major?_____

2. Where is your hometown?_____

3. Do you plan to get a four-year degree? ____yes ____no

4. If yes, where do you plan to get your degree from?_____

   Would you prefer that a four-year college be closer to the Mesabi Range Region? ____yes ____no

5. Would you prefer to obtain employment in the Mesabi Range Region when you finish college? ____yes ____no

   If yes, would you seek a job directly or indirectly related to the new steel plant?
   i. ____yes, directly related
   ii. ____yes, indirectly related
   iii. ____no

Focus Group Questions:

1. What is your major?
2. Where is your hometown?
3. Do you plan to get a four-year degree?
4. Where do you plan to get your degree from?
5. Would you prefer that a four-year college be closer to the Mesabi Range Region?
6. Would you prefer to obtain employment in the Mesabi Range Region when you finish college?
7. Would you seek a job directly or indirectly related to the new steel plant?
8. Why would area high school students not come here?
9. Is there anything lacking about this institution, such as dorms, faculty, sports, etc.

10. How many students are in the high school/college dual credit program?

11. Where would you go if they didn't come here?

12. Generally speaking, what is the community's image of your institution?

13. What distance programs, or alternative programs like Arrowhead University, are readily available in the Mesabi Range Region?

14. Does this institution have any relationship with the Centers of Excellence at Bemidji State University or Minnesota State University at Mankato?

15. Who would like to return to, or stay on, the Mesabi Range Region after completing four years of college?

16. What programs would be most sought after as four-year programs if offered in the Mesabi Range Region?

17. What do you hear from employers regarding their needs to hire four-year graduates?

18. What do you anticipate the future employment demand to be once the new steel plant is completed?

19. What do you hear from employers regarding their needs to hire four-year graduates?

20. What do you anticipate the future employment demand to be once the new steel plant is completed?

21. What does the future hold for your institution? Are there any new academic or building plans for your institution?

APPENDIX F. Example of Key Informant Interview Format – Community College Administrators

Mesabi Range Region Higher Education Study

Educational Institution:

Location:

Contact Person:

1. How many students are enrolled?
2. Where are they from?
3. Why do they come here?
4. Are there some unique or outstanding programs that draw students from a wider area?
5. How many older employed people would be interested in attending your school?
6. Why would area high school students not come here?
7. Is there anything lacking about this institution, such as dorms, faculty, sports, etc.
8. How many students are in the high school/college dual credit program?
9. Where would they go if they didn't come here?
10. Generally speaking, what is the community's image of your institution?
11. What distance programs, or alternative programs like Arrowhead University, are readily available in the Mesabi Range Region?
12. Does this institution have any relationship with the Centers of Excellence at Bemidji State University or Minnesota State University at Mankato?
13. What is the graduation rate at this institution?
14. How many would like to get a four-year degree?
15. Where do they go or what do they do when they leave here?
16. How many of these would like to return to, or stay in, the Mesabi Range Region after completing four years of college?

17. What programs would be most sought after as four-year programs if offered in the Mesabi Range Region?

18. What do you hear from employers regarding their needs to hire four-year graduates?

19. What do you anticipate the future employment demand to be once the new steel plant is completed?

20. What do you hear from employers regarding their needs to hire four-year graduates?

21. What do you anticipate the future employment demand to be once the new steel plant is completed?

22. Will this result in a need for more two-year program graduates?

23. Will this result in a need for more four-year program graduates?

24. What does the future hold for your institution? Are there any new academic or building plans for your institution?

APPENDIX G. Key Informant Interview Participants

- Post-Secondary Administrators:
  - Jean Bailey, Dean of Academic Affairs, Mesabi Range Community & Technical College
  - Sue Collins, Vice President, Northeast Higher Education District, and Director, Arrowhead University Consortium
  - Joann Fredrickson, Provost and Vice President for Academic Affairs, Bemidji State University
  - Greg Fox, Vice Chancellor for Finance and Operation, UMD
  - Robert Griggs, Associate Vice President, Information Technology and Extended Learning, Bemidji State University
  - Ron Huesman, Assistant Director, Office of Institutional Research, University of Minnesota
  - Jerry Janezich, Director of Advancement, Arrowhead University Consortium, and Director of Government Relations, MNSCU
  - Mike Johnson, Provost, Itasca Community College
  - Kathryn A. Martin, Chancellor, University of Minnesota Duluth
  - Barbara McDonald, Dean of Academic Affairs, Itasca Community College
  - Doug Olney, Director of Institutional Research, Itasca Community College
  - Vince Magnuson, Vice Chancellor for Academic Administration, UMD
  - Jon Quistgaard, President, Bemidji State University
  - Scott Olson, Provost and Vice President of Academic Affairs, Minnesota State University
  - James P. Riehl, Dean, Swenson College of Science and Engineering, UMD
  - Craig Schoenecker, MNSCU System Director for Research
  - Joe Sertich, President, Northeast Higher Education District
  - Ken Simberg, Provost, Hibbing Community College
  - Ron Ulseth, Instructor, Engineering, Itasca Community College
  - Karen White, 360º Manufacturing and Applied Engineering Center of Excellence, Bemidji State University
- Secondary Administrators:
  - Gene Paulson, Superintendent, Mesabi East
  - Joe Silko, Superintendent, Grand Rapids
- Others:
  - Don Fosnacht, Director, Center for Applied Research and Technology Development, NRRI
  - David Hendrickson, Director, Coleraine Minerals Research Lab
  - Mike Hovland, Senior Consultant, Enrollment Management Services, ACT
  - Mike Lalich, Director, Natural Resources Research Institute
  - Tom Rukavina, Minnesota House of Representatives
- Employers and Human Resources:
  - Lynn Hachey, Human Resources, Fairview University Medical Center
  - Brendan Ashby, Executive Director, NE MN Area Health Education Center
  - Dale Ekmark, Noramco Engineering
  - Mike Kern, Human Resources, Hibbing Taconite
  - Robert Bolf, Recruitment, Cleveland Cliffs
  - Paula Jackson, Human Resources, Barr Engineering

- ❑ Terri Nystrom, Human Resources, Delta Dental
- ❑ Patty Blegen, Human Resources, Mars Company
- ❑ Scott Anderson, Finance, Mars Company
- ❑ Al Hodnick, MN Power
- ❑ Steve Rutherford, Manager-Engineering & Services, Iron Dynamics Division (Mesabi Nugget)
- ❑ LaTisha Gietzen, Polymet
- ❑ Bob Poulter, Mielke Electric
- ❑ Linda Niskanen, Executive Director, Virginia Foundation
- ❑ Roy Smith, Workforce Development, Iron Range Resources
- ❑ Daniel Jordan, Mining & Minerals Program Supervisor, IRR
- ❑ Gary Cerkvenik, Lead Consultant, Laurentian Energy Authority
- ❑ Dave Aagenes, Minetac
- ❑ Todd Smrker, Ainsworth Lumber
- ❑ John Chell, Director, Arrowhead Regional Development Council
- ❑ Howard Hillshorst, Minnesota Steel
- ❑ Tom Aubin, VP-Contracting Out, United Steel Workers
- ❑ Paul Monacelli, Training Coordinator, United Steel Workers
- ❑ Greg Chandler, UPM-Kymmene Blandin Paper Mill
- ❑ John Tourville, Executive Director, Virginia Economic Development Association
- ❑ Craig Pagel, Director, Iron Mining Association

APPENDIX H. Community College Student Survey Results

Table 1. At which community college are you enrolled?

	N	%
Itasca	167	44.5
Hibbing	66	17.6
Mesabi--Virginia	51	13.6
Mesabi--Eveleth	31	8.3
Vermilion	34	9.1
Rainy River	26	6.9
Total	375	100.0

Table 2. What major or area of study are you pursuing?

	N	%
Nursing	64	17.1
Forestry/Natural Resources/ Wildlife Management	34	9.1
Engineering	25	6.7
Other	252	67.2
Total	375	100.0

Table 3. What is the highest post-secondary degree you would eventually like to obtain?

	N	%
don't know	10	2.7
none	7	1.9
2-year associate's	41	10.9
4-year bachelor's	162	43.2
master's	114	30.4
law	3	.8
MD	6	1.6
Ph.D	32	8.5
Total	375	100.0

Table 4. Do you plan to transfer to a four-year college after graduating from the community college?

	N	%
yes	262	69.9
no	45	12.0
not sure	68	18.1
Total	375	100.0

Table 5. Respondents not planning to transfer – importance of reasons in making transfer decision.

	Very Important	Somewhat Important	Not Important
Has my preferred academic program(n=40)	85.0% (34)	10.0% (4)	5.0% (2)
Quality academic program (n=40)	75.0% (30)	17.5% (7)	7.5% (3)
Cost savings (n=40)	75.0% (30)	15.0% (6)	10.0% (4)
Convenience (n=41)	68.3% (28)	29.3% (12)	2.4% (1)
Closeness to home (n=41)	56.1% (23)	34.1% (14)	9.8% (4)
Ability to stay with family while attending college (n=40)	55.0% (22)	15.0% (6)	30.0% (12)
Large school size (n=38)	5.3% (2)	15.8% (6)	78.9% (30)
Small school size (n=40)	22.5% (9)	37.5% (15)	40.0% (16)

Table 6. Reason for not transferring to a four-year college? (n=42)

	N	%
do not need additional education	22	52.4
can not afford additional education	11	26.2
do not want to leave the Range	9	21.4

Table 7. Which institution would you attend if you transferred?

	N	%
Bemidji State U	77	29.4
U of M Duluth	45	17.2
St. Scholastica	24	9.2
U of M Twin Cities	15	5.7
University of ND	12	4.6
St. Cloud State	8	3.1
University of Wisconsin Stevens Point	8	3.1
MSU Mankato	7	2.7
University of Minnesota- Crookston	4	1.5
University of Wisconsin Superior	4	1.5
Gustavus Adolphus College	3	1.1
North Dakota State University	3	1.1
Mayville State University	2	0.8
Metropolitan State	2	0.8
Minnesota State University Moorhead	2	0.8
Northwestern College of St. Paul	2	0.8
South Dakota State University	2	0.8
Arrowhead University	1	0.4

Table 7 (continued). Which institution would you attend if you transferred?

Art Institutes International Minnesota	1	0.4
art or business school	1	0.4
Ashford University Online	1	0.4
Champlin University	1	0.4
Cincinnati	1	0.4
Concordia College or Minnesota State University Moorhead	1	0.4
Hibbing Community College	1	0.4
I'd like to see VCC become a four-year college	1	0.4
Idaho	1	0.4
Lake Superior College (RN AD) followed by St. Scholastica (RN BA)	1	0.4
Lakehead University	1	0.4
Liberty University	1	0.4
Liberty University located in Lynchberg, VA.	1	0.4
McNally Smith College of Music	1	0.4
Michigan Technological University	1	0.4
North Central University-Twin Cities	1	0.4
North Dakota State College of Science	1	0.4
Northland College	1	0.4
Not sure - It is financially difficult. I wish ICC had a higher-level of degree.	1	0.4
Out of state	1	0.4
Possible online courses for Sales/Marketing	1	0.4
Reed	1	0.4
Rollins College	1	0.4
Texas A & M	1	0.4
University of Alabama	1	0.4
University of Anchorage	1	0.4
University of South Florida	1	0.4
University of St. Thomas	1	0.4
University of Wisconsin- River Falls	1	0.4
University of Wisconsin - Superior; or University of Minnesota - Morris	1	0.4
Washington State University - Pullman	1	0.4
whomever will offer accounting online	1	0.4
Not sure	9	3.4
Total	262	100.0

Respondents planning to transfer or "not sure"—importance of reasons in making transfer decision (Tables 8-13)

Table 8. Importance in transfer decision: has preferred program.

Transfer plans	very important	somewhat important	not important	Total
yes	235	12	2	249
	94.4%	4.8%	.8%	100.0%
not sure	50	11	1	62
	80.6%	17.7%	1.6%	100.0%
Total	285	23	3	311
	91.6%	7.4%	1.0%	100.0%

Table 9. Importance in transfer decision: quality academic program.

Transfer plans	very important	somewhat important	not important	Total
yes	214	32	1	247
	86.6%	13.0%	.4%	100.0%
not sure	50	10	0	60
	83.3%	16.7%	.0%	100.0%
Total	264	42	1	307
	86.0%	13.7%	.3%	100.0%

Table 10. Importance in transfer decision: convenience.

Transfer plans	very important	somewhat important	not important	Total
yes	133	98	15	246
	54.1%	39.8%	6.1%	100.0%
not sure	54	9	0	63
	85.7%	14.3%	.0%	100.0%
Total	187	107	15	309
	60.5%	34.6%	4.9%	100.0%

Table 11. Importance in transfer decision: cost savings.

Transfer plans	very important	somewhat important	not important	Total
yes	145	91	10	246
	58.9%	37.0%	4.1%	100.0%
not sure	51	11	1	63
	81.0%	17.5%	1.6%	100.0%
Total	196	102	11	309
	63.4%	33.0%	3.6%	100.0%

Table 12. Importance in transfer decision: closeness to home.

Transfer plans	very important	somewhat important	not important	Total
yes	116	90	41	247
	47.0%	36.4%	16.6%	100.0%
not sure	45	14	3	62
	72.6%	22.6%	4.8%	100.0%
Total	161	104	44	309
	52.1%	33.7%	14.2%	100.0%

Table 13. Importance in transfer decision: ability to stay with family while attending college.

Transfer plans	very important	somewhat important	not important	Total
yes	80	59	107	246
	32.5%	24.0%	43.5%	100.0%
not sure	40	9	13	62
	64.5%	14.5%	21.0%	100.0%
Total	120	68	120	308
	39.0%	22.1%	39.0%	100.0%

Table 14. Other reasons cited as important in transfer decision.

- Academics
- Active Learning
- An instructor that actually knows what they are talking about
- Athletic Program
- availability of online classes to fit in with my work schedule
- Baseball Program
- Campus Crusade for Christ on campus
- Close to the Minnesota Vikings
- day care facility
- Fishing, hunting
- good athletics
- Great Art Program!!
- Has to be mostly online, as I am a non-traditional student
- Helpful Professors
- I want to continue with a school that has a reputation for the program I am interested in
- I would prefer to stay @ HCC for a 4yr degree
- It is one out of the only two choices Mesabi has an articulation agreement with. Bemidji is the preferred school to transfer to for design majors. The other option is UW-Stout which is more for printing.
- knowledgeable faculty

Table 14 (continued).

- Must be a good college overall
- Offers online degree
- Online program for your bachelor's degree
- online course availability
- online courses available
- online courses available to fit my schedule
- Online Programs
- School Demographics - Quality of teachers
- still be able to meet the needs of my daughter
- The only option for an RN on the Range is Hibbing, which I have not heard good things about. If Mesabi could offer me an RN through their program, I would finish with them.

Table 15. If you are planning to transfer, what major or area of study do you plan to pursue at the transfer institution?

	N	%
Nursing	48	16.7
Business	34	11.8
Forestry/Natural Resources/ Wildlife Management	26	9.0
Psychology	23	8.0
Education	19	6.6
Healthcare-related	12	4.2
Criminal Justice	10	3.5
Undecided	9	3.1
Elementary Education	9	3.1
Engineering	7	2.4
Social Work	7	2.4
English	6	2.1
Graphic Design	6	2.1
Accounting	5	1.7
Mechanical Engineering	5	1.7
Electrical Engineering	4	1.4
History	4	1.4
Biology	3	1.0
Chemical Engineering	3	1.0
Communication and Science Disorders	3	1.0
Communications	3	1.0
Physical Therapy	3	1.0

Table 15 (continued). If you are planning to transfer, what major or area of study do you plan to pursue at the transfer institution?

Arts	2	0.7
Early Childhood	2	0.7
Chemistry	2	0.7
Computer Science	2	0.7
Design Technology	2	0.7
Geography/GIS	2	0.7
Music	2	0.7
Native American Studies	2	0.7
Pharmacy	2	0.7
Anthropology	1	0.3
Civil Engineering	1	0.3
Computer Engineering	1	0.3
Electrical & Computer Engineering	1	0.3
Finance	1	0.3
Journalism	1	0.3
O.T.	1	0.3
Outdoor Education	1	0.3
Paper Science	1	0.3
Paralegal Studies	1	0.3
Ph.D.	1	0.3
Philosophy, political science	1	0.3
Photography	1	0.3
Journalism	1	0.3
Social Sciences	1	0.3
Sociology	1	0.3
Spanish	1	0.3
Sports Management	1	0.3
Theatre	1	0.3
Veterinary Medicine	1	0.3
Veterinary Technology	1	0.3
Total	288	10

Table 16. Please rank the importance of the availability of internships or co-ops in your subject area:

	N	%
very important	180	57.5
somewhat important	110	35.1
not important	23	7.3
Total	313	100.0

Table 17. How valuable would it be to you if a bachelor's degree were to be offered by a college on the Iron Range?

	N	%
very valuable	238	76.0
somewhat valuable	64	20.4
not valuable	11	3.5
Total	313	100.0

Table 18. If a bachelor's degree program were available at one of the community colleges on the Iron Range, would you attend that college?

	N	%
yes	220	70.1
no	14	4.5
not sure	80	25.5
Total	314	100.0

Table 19. If no, why would you not attend?

	N
Would prefer attending 4-year college elsewhere.	11
Would be concerned about quality of program.	5
I am not satisfied with my overall experience in this program at Mesabi so far.	1
I do not care for the Iron Range or Mesabi Range College. I just do not like how either operate.	1
I don't like the Iron Range.	1
The school I am going to is a religious-based University.	1
Want to move away.	1

Table 20. If not sure whether or not you would attend a college on the Range if a bachelor's degree program were available, what would it depend on?

	N
academic programs offered	42
city in which program is offered	19
4 year sports	1
Academic Program and Quality of education	1
All of thee above	1
Both of those circumstances would have to figure into my consideration, among other things, like housing availability and the costs of living on the Range	1
Depends on the academic program AND the instructor. I feel that my current instructor ISN'T doing a very good job.	1
Future Plans	1
How established they are and what they offer. I wouldn't attend if it happened right away because a school wouldn't be established and you wouldn't get as much from it as an established college so it would be difficult I think the first few years if one	1
I don't know.	1
If they get an art program.	1
personal	1
Quality of College, Teachers, - How does the College rate in the nation.	1
Quality of the program offered	1
sports family	1
the quality of student life, intelligent professors, and subject matter that actually applies to the day to day struggle we call life.	1
the quality of the program offered and the cost of attending	1
tuition costs	1
whether or not I want to stay on the range	1
Which programs is offered & the depth & quality of program	1
Wrestling	1

Table 21. If you would attend a college on the range that offered a bachelor's degree program, where would you prefer that it be located?

	N	%
Eveleth	9	4.1
Grand Rapids	111	50.5
Hibbing	41	18.6
Virginia	59	26.8
Total	220	100.0

Table 22. What is your level of interest in obtaining a bachelor's degree from UMD if you could complete that institution's classes at one of the community colleges on the Iron Range?

	N	%
would definitely pursue a degree	136	45.5
would consider pursuing a degree	128	42.8
would definitely not pursue a degree	35	11.7
Total	299	100.0

Table 23. What is your level of interest in obtaining a bachelor's degree from BSU if you could complete that institution's classes at one of the community colleges on the Iron Range?

	N	%
would definitely pursue a degree	118	39.6
would consider pursuing a degree	131	44.0
would definitely not pursue a degree	49	16.4
Total	298	100.0

Table 24. What is your level of interest in obtaining a bachelor's degree from MSU Mankato if you could complete that institution's classes at one of the community colleges on the Iron Range?

	N	%
would definitely pursue a degree	60	21.3
would consider pursuing a degree	135	47.9
would definitely not pursue a degree	87	30.9
Total	282	100.0

Table 25. After college, would you like to reside on the Iron Range?

	N	%
yes	166	52.9
no	49	15.6
not sure	99	31.5
Total	314	100.0

Table 26. After completing college, do you think employment related to your academic program would be available on the Iron Range?

	N	%
yes	199	63.2
no	33	10.5
not sure	83	26.3
Total	315	100.0

Table 27. If you are planning to eventually obtain a graduate degree, what major or area of study do you plan to pursue?

	N	%
Nursing	39	16.9
Forestry/Natural Resources/ Wildlife Management	22	9.5
Business	21	9.1
Psychology	17	7.4
Undecided	16	6.9
Education	14	6.1
Healthcare-related	11	4.8
English	7	3.0
Graphic Design	7	3.0
Social Work	7	3.0
Engineering	6	2.6
Law	5	2.2
Biology	4	1.7
Criminal Justice	4	1.7
Electrical Engineering	4	1.7
Nurse Anesthetist	4	1.7
Accounting	3	1.3
Communication and Science Disorders	3	1.3
Elementary Education	3	1.3
Pharmacy	3	1.3
Science	3	1.3
Geography/GIS	2	0.9
History	2	0.9
Mechanical Engineering	2	0.9
Music	2	0.9
Physical Therapy	2	0.9
Anthropology	1	0.4
Art	1	0.4
Chemical Engineering	1	0.4
Chemistry	1	0.4
Civil Engineering	1	0.4
Communications	1	0.4
Computer engineering	1	0.4
Counseling	1	0.4
Early Childhood	1	0.4
Electrical & Computer Engineering	1	0.4
Mathematics	1	0.4
O.T.	1	0.4
PhD	1	0.4
Photography	1	0.4
Sociology	1	0.4
Sports Management	1	0.4
Theatre	1	0.4
Veterinary Technology	1	0.4
Total	231	100.0

Table 28. How valuable would it be to you if graduate degree programs were offered on-site at a campus on the Iron Range?

	N	%
very valuable	197	63.8
somewhat valuable	99	32.0
not at all valuable	13	4.2
Total	309	100.0

Table 29. Which graduate level programs would be a natural "fit" to make available to students on the Iron Range?

Nursing	31
Engineering	21
Forestry/Natural Resources/ Wildlife Management	20
Education	14
Psychology	9
Business	8
Geography/GIS	6
Social Work	6
Criminal Justice	4
Healthcare-related	4
Law	3
Accounting	2
English	2
Mining-related	2
Sociology	2
Anthropology	1
Biology	1
Nurse Anesthetist	1
Sports Management	1
Art	1

APPENDIX I. Incumbent Workers Survey Results

Table 1. Highest education level.

	N	%
High school or less	121	40.3
2-year AA degree	88	29.3
4-year Bachelors	74	24.7
Masters	15	5.0
Law	1	.3
PhD	1	.3
Total	300	100.0

Table 2. Attended community college on the Range?

	N	%
yes	62	20.7
no	238	79.3
Total	300	100.0

Table 3. Community college attended.

	N	%
Itasca CC	10	16.1
Hibbing CC	29	46.8
Mesabi-Virginia	19	30.6
Mesabi-Eveleth	1	1.6
Vermillion	3	4.8
Total	62	100.0

Table 4. Taking classes at CC?

	N	%
yes	9	3.0
no	291	97.0
Total	300	100.0

Table 5. Future plans.

	N	%
like to obtain bachelor's	37	12.3
like to obtain master's	14	4.7
no interest	165	55.0
not sure	84	28.0
Total	300	100.0

Table 6. Current place of residence.

	N	%
Grand Rapids	100	33.3
Hibbing	100	33.3
Virginia	100	33.3
Total	300	100.0

Table 7. Gender.

	N	%
Male	144	48.0
female	156	52.0
Total	300	100.0

Table 8. Major.

	N	%
business	15	11.1
education	13	9.6
nursing	10	7.4
healthcare	6	4.4
IT/computer	6	4.4
psychology	5	3.7
engineering	3	2.2
biology	3	2.2
electrical engineering	3	2.2
law enforcement	3	2.2
social work	2	1.5
inspection control	2	1.5
accounting/finance	2	1.5
sciences	2	1.5
MSN	2	1.5
pharmacy	2	1.5
BS	1	0.7
sociology	1	0.7
trades	1	0.7
music	1	0.7
theology	1	0.7
hotl/restaurant management	1	0.7
grammar/literature	1	0.7
heating/refrigeration	1	0.7
interior design	1	0.7
forestry	1	0.7
graphic arts	1	0.7
child development	1	0.7
thermodynamics	1	0.7
chemistry	1	0.7
speech pathology	1	0.7
TV advertising/marketing	1	0.7
math	1	0.7
political science	1	0.7
legal	1	0.7
veterinary	1	0.7
civil tech	1	0.7
home economics	1	0.7
don't know	34	25.2
Total	135	100.0

Table 9. Need justifies Bachelor/Masters on Range.

	N	%
yes	199	66.3
no	43	14.3
not sure or don't know	58	19.3
Total	300	100.0

Table 10. Value of Bachelor's program on Range.

	N	%
very valuable	141	47.0
somewhat valuable	69	23.0
not at all valuable	90	30.0
Total	300	100.0

Table 11. Value of Master's program on Range.

	N	%
very valuable	119	39.7
somewhat valuable	83	27.7
not at all valuable	98	32.7
Total	300	100.0

Table 12. Preferred location of program.

	N	%
Eveleth	3	1.0
Grand Rapids	97	32.3
Hibbing	101	33.7
Virginia	99	33.0
Total	300	100.0

Table 13. If offered, likelihood of attending.

	N	%
very likely	47	15.7
not sure	77	25.7
very unlikely	176	58.7
Total	300	100.0

Table 14. Natural "fit" grad programs.

	N	%
BS	34	11.3
engineering	26	8.7
business	22	7.3
nursing	18	6
masters	17	5.7
education	16	5.3
trades	9	3
healthcare	8	2.7
IT/computer	8	2.7
natural resources	4	1.3
forestry	4	1.3
social work	3	1
electrical engineering	3	1
high school	2	0.7
hotel/restaurant management	2	0.7
agriculture	2	0.7
biology	2	0.7
law enforcement	2	0.7
TV advertising/marketing	2	0.7
veterinary	2	0.7
sociology	1	0.3
economics	1	0.3
grammar/literature	1	0.3
industrial programs	1	0.3
service industries	1	0.3
psychology	1	0.3
accounting/finance	1	0.3
technology classes	1	0.3
sciences	1	0.3
pharmacy	1	0.3
geology	1	0.3
mining	1	0.3
architect	1	0.3
don't know	101	33.7
Total	300	100.0

Table 15. Number of years resident.

	N	%
1-10	79	26.3
11-20	70	23.3
21-30	73	24.3
31-40	24	8.0
40 +	54	18.0
Total	300	100.0

Table 16. Age.

	N	%
25-30	43	14.3
31-35	30	10.0
36-40	44	14.7
41-45	44	14.7
46-50	103	34.3
51-55	36	12.0
Total	300	100.0

Table 17. Preferred location of program.

Future plans	Eveleth	Grand Rapids	Hibbing	Virginia	Total
like to obtain bachelor's	1	8	11	17	37
	2.7%	21.6%	29.7%	45.9%	100.0%
like to obtain master's	0	4	4	6	14
	.0%	28.6%	28.6%	42.9%	100.0%
no interest	1	58	57	49	165
	.6%	35.2%	34.5%	29.7%	100.0%
not sure	1	27	29	27	84
	1.2%	32.1%	34.5%	32.1%	100.0%
Total	3	97	101	99	300
	1.0%	32.3%	33.7%	33.0%	100.0%

Table 18. Preferred location of program.

If offered, likelihood of attending	Eveleth	Grand Rapids	Hibbing	Virginia	Total
very likely	2	13	14	18	47
	4.3%	27.7%	29.8%	38.3%	100.0%
not sure	0	27	33	17	77
	.0%	35.1%	42.9%	22.1%	100.0%
very unlikely	1	57	54	64	176
	.6%	32.4%	30.7%	36.4%	100.0%
Total	3	97	101	99	300
	1.0%	32.3%	33.7%	33.0%	100.0%

Table 19. Preferred location of program.

Current Residence	Eveleth	Grand Rapids	Hibbing	Virginia	Total
Grand Rapids	2	76	14	8	100
	2.0%	76.0%	14.0%	8.0%	100.0%
Hibbing	1	8	78	13	100
	1.0%	8.0%	78.0%	13.0%	100.0%
Virginia	0	13	9	78	100
	.0%	13.0%	9.0%	78.0%	100.0%
Total	3	97	101	99	300
	1.0%	32.3%	33.7%	33.0%	100.0%

APPENDIX J. High School Seniors Survey Results

Table 1. High school attending.

	N	%
Grand Rapids	52	15.8
Eveleth/Gilbert	37	11.2
Nashwauk/Keewatin	37	11.2
Virginia	34	10.3
Hibbing	33	10.0
Cook	32	9.7
Mesabi East	21	6.4
Big Fork	17	5.2
Orr	15	4.5
Greenway	14	4.2
Chisholm	12	3.6
Albrook	11	3.3
Ely	8	2.4
Mt. Iron/Buhl	7	2.1
Total	330	100.0

Table 2. Currently taking classes at a community college as PSEO (Post-Secondary Educational Opportunity) student?

	N	%
no	301	91.5
yes	28	8.5
Total	329	100.0

Table 2a. Where PSEO students are enrolled.

	N	%
Itasca Community College	12	46.2
Hibbing Community College	4	15.4
Mesabi Range Community & Technical College-Virginia	5	19.2
Mesabi Range Community & Technical College-Eveleth	4	15.4
Vermillion Community College	1	3.8
Total	26	100.0

Table 3. Highest degree goal.

	N	%
none	9	2.7
two-year associate degree	29	8.8
four-year bachelor's degree	117	35.6
Master's degree	97	29.5
Law degree	12	3.6
MD	35	10.6
PhD	30	9.1
Total	329	100.0

Table 4. Plans to attend college in fall?

	N	%
yes	300	90.9
not sure	24	7.3
no	6	1.8
Total	330	100.0

Table 5. College selection factor.

	Very Important		Somewhat Important		Not Important	
	N	%	N	%	N	%
Has my preferred academic program	270	86.3	36	11.5	7	2.2
Quality academic program	262	84	44	14.1	6	1.9
Cost savings	180	57.7	122	39.1	10	3.2
Convenience	126	40.6	161	51.9	23	7.4
Small school size	61	19.6	148	47.4	103	33
Closeness to home	48	15.4	168	53.8	96	30.8
Ability to stay with family while in college	26	8.3	78	25	208	66.7
Large school size	18	5.8	131	42.1	162	52.1

Table 6. Major planning to pursue.

	N	%
undecided	35	11.1
engineering	27	8.6
business undecided	27	8.6
pharmacy	26	8.3
nursing	21	6.7
marketing	12	3.8
sciences	12	3.8
education	11	3.5
dental hygiene	9	2.9
music business	9	2.9
medical	8	2.5
computers	8	2.5
law enforcement	8	2.5
physical therapy	7	2.2
criminology	6	1.9
math	6	1.9
physiology	5	1.6
art	4	1.3
writing	4	1.3
veterinary medicine	4	1.3
architecture	4	1.3
forestry	3	1.0
sociology	3	1.0
construction management	3	1.0
sports medicine	3	1.0
communication	3	1.0
politics	3	1.0
natural resources	2	0.6
wildlife management	2	0.6
medical administrative	2	0.6
financial	2	0.6
graphic design	2	0.6
astro-physics	2	0.6
heavy equipment operations	2	0.6
interior design	2	0.6
child development	2	0.6
radiology	2	0.6
meteorology	2	0.6
hepatology	1	0.3
industrial control	1	0.3%
conservation/geographical mapping	1	0.3%

Table 6 (continued). Major planning to pursue.

carpentry	1	0.3
landscape design	1	0.3
human resource	1	0.3
automation	1	0.3
foreign affairs	1	0.3
international women's studies	1	0.3
outdoors	1	0.3
surveyor	1	0.3
technological studies	1	0.3
fire fighting	1	0.3
counselor	1	0.3
public relations	1	0.3
marine biologist	1	0.3
collision repair	1	0.3
culinary arts	1	0.3
journalism	1	0.3
theatre	1	0.3
biology	1	0.3
Total	314	100.

Table 7. Enrollment plans for next fall.

	N	%
community college	85	27.2
not sure	56	17.9
four-year college*	171	54.8
Total	312	100.0

*see Table 7a

Table 7a. Which four-year college?

	N	%
University of Minnesota Duluth	23	16.1%
College of St. Scholastica	15	10.5%
University of Minnesota	15	10.5%
Bemidji State University	10	7.0%
University of North Dakota	10	7.0%
St. Cloud State University	6	4.2%
Concordia-Moorhead	6	4.2%
St. Thomas	4	2.8%
St. John's	4	2.8%
Superior	3	2.1%
NDSU	3	2.1%
Gustavus	3	2.1%
unknown	3	2.1%
St. Benedicts	2	1.4%
MTU	2	1.4%
Northern Michigan	2	1.4%
VW	2	1.4%
Minnesota State University	1	0.7%
U of M-Morris	1	0.7%
Institute of American Indian Arts	1	0.7%
BYU-Utah	1	0.7%
Hamline	1	0.7%
U of Utah	1	0.7%
U of Montana	1	0.7%
Princeton	1	0.7%
Military Academy	1	0.7%
St. Olaf	1	0.7%
Augsburg	1	0.7%
NMSU	1	0.7%
Michigan Tech	1	0.7%
St. Catherine's	1	0.7%
Concordia-St. Paul	1	0.7%
Missouri Western State U	1	0.7%
North Central	1	0.7%
UMD	1	0.7%
U of Minneapolis	1	0.7%
U of M-Crookston	1	0.7%
Out of state	1	0.7%
Bethel	1	0.7%
Bemidji	1	0.7%
CSB-SJU	1	0.7%
IPR	1	0.7%
St. Kaplan	1	0.7%
Northland	1	0.7%
Bowling Green State	1	0.7%
Notre Dame	1	0.7%
McNally Smith	1	0.7%
Total	143	100

Table 8. Which community college planning to enroll at?

	N	%
Hibbing Community College	28	32.6
Itasca Community College	19	22.1
Mesabi Range Community & Technical College-Virginia	17	19.8
Mesabi Range CTC-Eveleth	8	9.3
Vermillion Community College	4	4.7
Lake Superior College	3	3.5
Central Lakes	2	2.3
Hibbing or Eveleth	1	1.2
Hibbing or Itasca	1	1.2
MSCTC Moorhead	1	1.2
Chicago or Minneapolis	1	1.2
unknown	1	1.2
Total	86	100.0

Table 9. If going to community college, plan to transfer to four-year college?

	N	%
yes*	49	57.6
No**	20	23.5
not sure	16	18.8
Total	85	100.0

*see Table 9a. **see Table 9b.

Table 9a. Four-year college planning to transfer to?

	N	%
Bemidji State University	10	21.7
University of Minnesota Duluth	7	15.2
University of North Dakota	6	13.0
University of Minnesota	4	8.7
College of St. Scholastica	2	4.3
Another two-year degree	2	4.3
McNally Smith	2	4.3
University of Colorado	2	4.3
St. Cloud State University	1	2.2
Hibbing	1	2.2
NDSU	1	2.2
U of M-Crookston	1	2.2
VWS	1	2.2
Mayo Med School	1	2.2
Chicago or Minneapolis	1	2.2
UMD	1	2.2
U of Wisconsin-Stevens Point	1	2.2
Lake Superior	1	2.2
unknown	1	2.2
Total	46	100.0

Table 9b. If not planning to transfer to four-year college, why not?

	N (20)	%
Do not need additional education	11	55.0
Can not afford additional education	3	15.0
Do not want to leave Iron Range	2	10.0
Other	4	20.0

Table 10. Value of Bachelor's degree offered on Range?

	N	%
very valuable	100	31.3
somewhat valuable	159	49.7
not at all valuable	61	19.1
Total	320	100.0

Table 11. Would attend if Bachelor's degree offered at one of Community Colleges?

	N	%
yes	66	20.6
no*	128	40.0
not sure, it depends**	126	39.4
Total	320	100.0

*see Table 11a. **see Table 11b.

Table 11a. If no, why not?

	N	%
Would prefer attending four-year college elsewhere	104	81.3
Would be concerned about program quality	12	9.4
Would not be able to afford it	3	2.3
Do not need additional education	3	2.3
Too close to home	2	1.6
Wants to leave	2	1.6

Table 11b. Not sure if would attend college at a community college offering bachelor's degree in the Mesabi Rang Region; depends on:

	N	%
Which academic programs are offered	105	85.4
The city which the program is offered	12	9.8
other	6	4.9
Total	123	100.0

Table 12. If would attend four-year program on Range, preferred location?

	N	%
Eveleth	6	9.5
Grand Rapids	13	20.6
Hibbing	21	33.3
Virginia	23	36.5
Total	63	100.0

Table 13. Like to reside on Range after college?

	N	%
yes	92	28.7
no	73	22.7
not sure	156	48.6
Total	321	100.0

Table 14. After college, think program-related jobs available on Range?

	N	%
yes	154	48.0
no	44	13.7
not sure	123	38.3
Total	321	100.0

Table 15. Willingness to attend a college in the Mesabi Range if bachelor's degree were available, sorted by planned major.

	Would attend	Would not attend	not sure, it depends	Total
engineering	7	12	7	26
	26.9%	46.2%	26.9%	100.0%
nursing	11	2	8	21
	52.4%	9.5%	38.1%	100.0%
forestry	2	0	1	3
	66.7%	.0%	33.3%	100.0%
other	46	114	108	268
	14.5%	47.8%	46.3%	100.0%
Total	66	128	124	318
	20.8%	40.3%	39.0%	100.0%

Appendix K. Natural Resources Research Institute Forestry Initiative: Degree Programs on the Iron Range

Overview

Four-year and advanced degree programs are being considered as offerings on the Iron Range. Much of the focus of this analysis has been on mining and engineering-related fields. Additional consideration should be natural resources and forest management programs.

The annual contribution to the Minnesota economy by the forest products industry is nearly $7 billion. A vast portion of this extraordinary economic output is dependent on wood produced through harvesting of stands located in Northern Minnesota. Minnesota's forest products industry competes on a global scale; providing for adequate wood supplies is critical to maintaining global competitiveness and the economic and social benefits from this industry.

Moreover, higher energy prices and increasing concerns about the environmental effects of atmospheric carbon dioxide emissions have caused a renewed interest in wood biomass for energy. Understanding the forest resource and opportunities to increase forest production will be critical to informed policy decisions which will impact timber availability and sustainability to this emerging energy industry and the existing forest products industry.

NRRI

Currently, the Forestry Program within the Natural Resources Research Institute focuses on applied research to improve the productivity and management of Minnesota's forests for the purpose of both fiber and biomass energy production. The NRRI Forestry Program conducts research in management of natural forests as well as plantations including red pine and hybrid poplar. The Program also manages a large research effort entitled the Minnesota Forest Productivity Research Cooperative, a consortium of public and industrial land management agencies. The goal is to develop cost-effective forest management practices that increase forest productivity.

The NRRI also conducts research on equipment development, best practices, biomass assessment, and the economic feasibility of using brush lands and forest harvest residues for energy. Energy research is being done to assess the technical and economic feasibility of a number of emerging energy technologies to process wood resources for solid and liquid fuels in the region.

Program Expansion to the Iron Range

The Iron Range is uniquely positioned to take advantage of the existing forest products industry and the expanding energy industry with the resources and scope of the work of NRRI to create new fields of instruction for higher education. This large network of field research sites and an applied forestry perspective could be integrated in an instructional program on silviculture and forest science. The NRRI could provide

leadership in the assistance of curriculum development and instruction in both applied field research and the application of computer technology in forest resource assessment.

Most of the demand for applied forestry and private sector forestry professionals is met by out of state institutions, like Stevens Point in Wisconsin. A degree program on the Iron Range with the help of NRRI could help meet this need. Based upon the rate of expected retirements and the potential demand for trained forestry professionals, the future for employment in forestry is bright.

The idea is to use the resources and experience of the NRRI to expand degree offerings on the Iron Range. This utilizes existing experience, research stations, and the practical understanding of the nature of the forest economy with the environmental skills necessary to allow industry to operate in a sustainable manner. As research in mining expanded NRRI's reach to include the Coleraine lab, now research in forestry will allow expanded educational offerings for our students while meeting real marketplace needs for applied forestry professionals, trained environmental leaders, and expertise in the expanded energy sector.

Summary

NRRI should be engaged to help develop these degree programs. Further, long-term funding should be sought to make these ideas reality. These concepts should be included in the draft report being considered by the leadership in Northern Minnesota concerning expanded degree programs.