Approved: 1/18/94
Date

MINUTES OF THE HOUSE COMMITTEE ON ECONOMIC DEVELOPMENT.

The meeting was called to order by Education Chairperson Duane Goossen at 3:30 p.m.. on January 12, 1994 in Room 519-S of the Capitol.

All members were present except:
Representative Tom Bishop
Representative George Dean, excused
Representative Jerry Henry, excused
Representative Greg Packer, excused
Representative Forrest Swall, excused

Committee staff present: Lynne Holt, Legislative Research Department
Bob Nugent, Revisor of Statutes
Ellie Luthye, Committee Secretary

Conferees appearing before the committee:
Dr. Charles Warren, President, Kansas Inc.
Dr. Lee Droegemueller, Commissioner of Education

Others attending: See attached list

The House Economic Development Committee and the House Education Committee met in joint session to hear testimony regarding school-to-work transition programs.

Chairman Goossen welcomed the Economic Development committee members and Chairman Mead responded.

Chairman Goossen called on Dr. Charles Warren as the first conferee. Dr. Warren gave a review of what the school-to-work transition program was and why it is important as well as the types of programs and potential policy issues. He told the committee there was a need to think about what the goals are regarding school-to-work and if we are willing to change our education system to reach these goals. He continued the process by which students are prepared for the world of work must change to reflect the increasing competitive demands and students must be taught the required skills and competencies as well as the theory and practice of work. (Attachment 1) Dr. Warren also called attention to the report on a survey that had been done in the Turner Unified School District in Kansas City which identified how many students in the school district were currently working, what was the nature of that employment and how their employment affected their grade average. (Attachment 2)

Dr. Droegemueller next presented testimony on the role of business in this school-to-work transition program. He stated we do not have the highly structured process to help learners make the transition from school-to-work or from work to retraining as found in other countries. He continued that the skills of teamwork, collaboration, decision making, mathematics, and communications are the ones QPA wants the students to have as they enter the workforce. He reported in November and December, over eighty Kansas business representatives - CEO's and personnel managers, reaffirmed their need for the worker who has basic skills, thinking skills, teamwork skills, use of information skills but only 13 percent of the employers have restructured their business to allow these future workers to use their skills. He concluded that if the school-to-work transition is to be successful, it is very dependent on both business and education. (Attachment 3)

Lynne Holt, Research, distributed copies of articles on New Developments in School-To-Work Transition and Industry's New Schoolhouse. (Attachments 4 and 5)

Following questions from the committees to Dr. Warren and Dr. Droegemueller, Chairman Goossen adjourned the meeting at 5:00 p.m., reminding the committees there would be a joint meeting on Thursday, January 13th in Room 519-S.

GUEST LIST

Committee: Education/Economic Development **Date:** 1-12-94

NAME: (Please print)	Address:	Company/Organization:
Bill Lawes	Topeka	Ks. Dept Human Res
Craig Grant	Topeka	KNEA
Sue Childs	Topeka	KNEA
Ann Motherland	Overland Park	OP Chamber of Commerce

School-to-Work Transition Initiative

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Issues for Policy Development

prepared by

Scott Hessell
Senior Policy Analyst

for

Senate Committee on Commerce
Senate Committee on Education
House Committee on Economic Development
House Committee on Education

January 12, 1994

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Economic Development
January 12, 1994
Attachment 1

School-to-Work Transition Initiative

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Issues for Policy Development

1. Why is School-to-Work Important?

❑ *For Schools* The term "school-to-work" has been increasingly used by individuals -- educators, political leaders, business executives, and the media -- seeking a remedy for the many problems and needs in our schools and society. While many of these ills may appropriately lie at our schools' doors, the real problem is the incompatibility of the skills of our schools' graduates and the demands of an increasingly competitive and changing workplace. The competitive pressures that are being placed on our businesses include greater foreign competition, more sophisticated consumer demand, an increasingly diverse labor force, and more advanced technology. These demands consequently require graduates who can "do" as well as "think." Technical reading, application of science and mathematical principles to real world practices, computer literacy, teamwork, and problem-solving are only a few of the graduate's new requirements. But these skills have never been a central element of the classroom, particularly for those not bound for college -- those youth often referred to as the "neglected majority" or "forgotten half." The process by which students are prepared for the world of work must change to reflect these increasing competitive demands. All students must be taught the required skills and competencies and both the theory and practice of work.

❑ *For Businesses* School-to-work initiatives have been initiated exclusively as a means for changing how schools prepare students for work. At first glance this may appear overly obvious; our graduates are not being prepared well for the workplace so then we should simply change the way they are prepared. Lost in this simple argument, though, is for what type of workplace should students be prepared: the traditional hierarchical workplace typical of most companies or the bottom-up, adaptive workplace common in the country's most dynamic companies.

Most companies are still organized along very top-down, authoritarian principles reminiscent of mass production facilities and "scientific management." These types of organizations simply want employees to show up for work on time, put in a full day's work, and do as they are told. Managers demand compliance and leave relatively little to employee judgement or interpretation. Our educational institutions have obliged the leaders of industry and produced the appropriate type of graduate.

This shared managerial and educational philosophy may work in a stable economy but it is no longer suitable. The economy, as stated above, has dramatically changed. Demands on managers and workers have grown tremendously over the past decade and these will only continue to increase. Companies that are internationally competitive have developed far more "adaptive cultures" [Kotter and Neskett]. They welcome and encourage innovation, risk-taking, employee participation, and training and development. But this type of company remains the exception rather than the rule.

If educators must change how they prepare youth so that graduates are better prepared for the reality of the economy and the workplace, companies themselves must acknowledge the challenges that also face them. It is unproductive in the long run to develop innovative, well-trained graduates if they simply are to work for organizations mired in a mindset long since past.

The development of an effective school-to-work transition system provides the opportunity to address both of these issues. This paper raises issues that directly affect the school and how it relates to work. The overall implementation of Kansas Inc.'s new economic development strategy, *A Kansas Vision*, addresses in detail the issues pertaining to the development of more adaptive, higher performing businesses.

2. What is "School-to-Work Transition?"

❑ ***How is "School-to-Work" Defined?*** School-to-work initiatives or programs, like many things, are usually easy to recognize but fairly hard to explain. Long lists of "characteristics" are more likely to confuse the issue rather than clear it up. School-to-work, at its core, is: *a systemic or programmatic approach involving both secondary and post-secondary education with the purpose of preparing students for successful and fulfilling careers by providing them a clear set of skills and competencies that meet the competitive and ever-changing demands of the workplace.*

❑ ***System versus Program*** The term "school-to-work" is used to characterize both a single program and an overall system of education. This multiple use of the term often creates confusion over both the general structure and intent of a particular initiative. The overall goal, as stated above, is the same in either a systemic or programmatic initiative. A programmatic change attempts generally to create a single, well-defined option for this successful transition to occur. Ideas such as "vocational magnet schools" or "youth apprenticeship" programs are examples of such initiatives. A reorganization of the educational system toward a greater focus on the school-to-work goal, on the other hand, is characterized by dramatic changes in how teachers teach and students learn.

❑ *Types of Programs* Many states and local communities have implemented various school-to-work programs. A number of these have emulated the programs of our international competitors, particularly Germany. All of these initiatives can be categorized into fairly distinct groups:

- *Cooperative Education* is a method of instruction of vocational education for individuals who receive instruction through written cooperative arrangements between the school and employer. Instruction includes alternating between required academic courses in school and related occupational instruction in a job. Work periods and school attendance may be for alternate half days, full days, weeks, and other periods of time in fulfilling the program.

- *Vocational Magnets* are typically specialized schools that focus on either a specific occupation or industry. The nature and degree of school and work-based integration is dependent largely on the structure of the school and industry. There usually is no specific articulation to higher education.

- *School-based Enterprises* are small businesses created by students to supplement existing local industries or to supply new products or services absent from the local economy. These enterprises typically are not simulations but real, economically viable business ventures.

- *Career or Youth Academies* have been referred to as a "school within a school." Students focus on a specific industry or occupation within the school environment through work simulation and academic instruction that emphasizes practical workplace skills. Employers play an important role in defining curriculum and many hire students during the summer months or provide limited internships during the school year.

- *Tech Prep* links the last two years of high school with two years of post-secondary instruction in a community college or other technical school. Students earn an associate degree or professional certification that combines strong elements of basic academic skills with advanced technical courses in specific occupations.

- *Youth Apprenticeship* combines both school- and work-based learning that is highly coordinated. Students often receive paid work experience. Vocational and academic curricula are integrated through programs that usually last a couple of years. Students often earn a certificate that establishes a recognized attainment of academic and occupational skill mastery.

❑ ***Federal School-to-Work Initiative*** President Clinton has identified school-to-work transition as a major education and work force competitiveness initiative of his administration. Legislation has been introduced in the Congress to implement a new program to provide planning and implementation funds to the states for the development of school-to-work programs - or more accurately described as "youth apprenticeship." This act is called the School-to-Work Opportunities Act.

The purpose of this act is to encourage states to establish school-to-work transition programs for youth. It is intended that each state will receive an implementation grant from the federal government within four years. The implementation grants will be awarded to states by the Departments of Labor and Education on a competitive basis. All programs must meet certain core principles:

- integrate both work-based and school-based learning;

- provide opportunities for students to complete a "career major" through an articulated program of education that typically includes post-secondary education, a high school diploma, "skill certificate," *or* post-secondary degree or certificate.

- included core components are:

  work-based: this component *must include* a planned program of job training, paid work experience, workplace mentoring, instruction in general workplace competencies, and broad instruction in a particular industry.

  school-based: this component *must include* career exploration and counseling, a career major, a program of academic standards and skill certificate requirements, and student evaluations.

  connecting activities: this component *must include* placing students in work-based opportunities, liaison between parties, technical assistance to teachers and mentors, post-program assistance to students, student outcomes evaluation, and linking between these general activities and private sector strategies of upgrading their current workers' skills.

The federal initiative differs in several fundamental ways from a more encompassing school-to-work system. These general differences must be understood if the state develops a new transition system. The two major differences are:

- The federal program requires a work-based component, including a paid work experience. A broader transition system includes a paid or

unpaid work-based component as an option rather than a requirement.

- The strong emphasis in the federal initiative on a work-based component plays down the need for continued post-secondary education. Most leading scholars involved in school-to-work transition efforts focus on the need for having advanced basic skills and technical training beyond the normal high school curriculum.

3. Kansas School-to-Work System: Potential Policy Issues

The principal issue for Kansas is whether to develop a school-to-work transition system which is based on broad systemic changes or incorporates many of the programs outlined above including youth apprenticeship. The items outlined below provide some potential policy issues that will have to be addressed.

❑ *Develop a System or a Set of Programs* The first, yet obvious question, is whether or not the state should create a school-to-work "system" or adopt one or more of the above "programs"? A program can be incorporated into either a local community or state's current educational system. The degree of change in the educational institution and participating businesses depends on the selected program's scope. The current federal "school-to-work" initiative is a program that has a specific, well-defined set of guidelines. It alone, though, does not constitute a system of student transition.

A system, on the other hand, implies fundamental changes throughout education and how business reacts to it. It requires not only changes in defined policies and practices but also in the nature of learning and the value attached to educational achievement other than a college degree. It also assumes fundamental changes in businesses as well. The following items represent, in large measure, the more basic changes in policies that would have to be addressed. The questions and discussion raised under each are, as a result, focused principally on the development of an overall system.

❑ *Targeted Students: Eligibility and Focus* School-to-work programs have been developed to address inequities in educational opportunity between those students who did and did not go on to college. The belief was that non-college bound students did not receive the same educational challenge because traditional high school curriculum was geared to those who learned by thinking rather than doing. Whether college-bound students would similarly benefit from the combined "thinking and doing" curriculum has been raised as

an issue.

An important policy issue is which students should be the focus of, or eligible for, school-to-work offerings.

- Are all students recruited or only non-college bound students? Should students interested in selected occupations and/or industries, or all students instructed in general workplace competencies, be recruited?

- Should there be grade point or other achievement minimums set as eligibility requirements?

- How early should students become directly involved - middle school or high school? Which grade?

❑ *Curriculum and Assessment* A central element to a school-to-work system is the introduction of curriculum that includes both "thinking" and "doing" instruction and assessment. This new orientation requires significant changes, some of which are already underway, in how students are instructed and how they are assessed. Students are typically led into one of three tracks: academic, college-bound courses (thinkers); vocational or "shop" courses (doers), or, for the vast majority, somewhere in between. Relatively little overlap in instructional methods is available. Assessment followed the instruction. Assessment through the use of multiple choice tests, such as the Iowa Basic Skills test or the plethora of college entrance exams, do not allow "doers" to show their abilities. Questions also have been raised whether standardized tests inhibit "thinkers" as well.

The questions to be raised with regard to curriculum and assessment include:

- How can a new integrated "thinker/doer" curriculum be created and by whom?

- Can the current Quality Performance Accreditation (QPA) program effectively contributed to general school improvement in curriculum and assessment development, maintenance, and evaluation.

- Is the new curriculum designed for the state as a whole or are significant local variations allowed? How does the answer to this question correspond to the development of an overall system?

- What type of assessment can be used to accurately judge the performance of all types of students? This question has been answered by some with "performance-based" assessment; tests that allow a student to "demonstrate" rather than "recount" his or her ability.

- If assessment is based on performance, to what standard should students be held? How is that standard determined? Is it a local, state, national, or international standard?

- Are current educational requirements such as number of hours for high school graduation, college entrance exams, and number of hours or days in "school" compatible with proposed changes.

❑ ***Coordination Between Secondary and Post-Secondary Institutions***

Significant coordination exists between secondary and post-secondary educational institutions for the advancement of college-bound students. States have allowed students to transfer credits from community colleges to state universities and have provided for dual credits between high schools and post-secondary institutions. These allowances, though, have typically been for traditional college-bound courses and students. In Kansas, courses leading to an applied associate degree at the state's community colleges generally are not accepted at the state's regents universities. As well, many of the school-to-work programs outlined above have secondary/post-secondary cooperation as a fundamental element. Significant attention must be paid to the role of the various educational institutions and their relationship with one another.

- Should the state's school-to-work system require a combination of secondary and post-secondary education? Should options be available for students not wanting any post-secondary instruction?

- Should agreements on the acceptance of previous school credits be made between high schools, community colleges, area vocational technical schools, and regents' universities covering not only "academic" courses but "technical" courses as well? Currently, only academic courses may transfer throughout the system.

- Is the current structure of our post-secondary institutions appropriately designed to meet the training needs of many advanced technically-related occupations? Can the state adequately support, within the current post-secondary structure, the increasingly expensive technology required in many advanced occupational courses?

❑ *Teacher Preparation and Staff Development* Changes in curriculum and assessment also require significant changes in how our teachers teach and our administrators manage. Changes in how the state prepares and trains its future teachers and develops and retrains current teachers will be important to the long-term success of a school-to-work system.

- Should the State's schools change the criteria for hiring and promoting teachers to reflect the new type of instruction?

- How should the significant amount of staff development required be financed?

❑ *Student Counseling: The Role of Parent, Teacher, and Counselor* Fundamental change in the views of students, parents, teachers, and counselors toward non-college bound professions will be needed. A youth's success, as measured by the school and the parent, is still largely attained through a college education and a white collar job. This is in contrast to the types of jobs, and their requisite education, available today and in the future economy. Contemporary jobs require a more technical, hands-on instruction that an effective school-to-work system provides. The challenge for the state is to increase the awareness of this non-college bound option and to encourage students' to participate in it. Student counseling, whether by a parent, teacher, mentor, or counselor, is vital to this shift.

- On who must and can the state realistically focus its efforts to enhance this shift in counseling direction: parent, teacher, or counselor?

- What role can business, particularly through mentor programs, play in this process?

❑ *Recruitment and Involvement of Industry* Business plays a crucial role in the school-to-work system. Their central role in any effort is as the employer of graduates. Business has other very important contributions to make throughout the school-to-work transition, including:

- encouraging students to enter school-to-work programs and providing feedback during students' academic career

- serving as advisors to teachers and administrators on curriculum design, performance measures, and occupational standards;

- sponsoring students in either paid or unpaid work experience.

These roles are far beyond the typical view of business as a financier of computer equipment or other capital expenditures. The additional challenge to the state is how to recruit businesses to participate in the system. The number of businesses that would have to be involved depends greatly on the types of programs implemented but it would be fairly significant. This particularly would be the case in youth apprenticeship programs where school districts would have to find companies willing and able to "employ" students during the school year. Possible issues concerning the recruitment of business include:

- Should the state only recruit businesses that offer training opportunities in "high skill, high wage" occupations? Are there a sufficient number of employers available to offer this type of training, particularly in the state's non-metropolitan areas? If not, are there other principally school-based efforts that could sufficiently train students for these types of occupations? More fundamentally, can businesses offer more basic instruction such as teamwork, problem-solving, and work ethic through either work- or school-based initiatives?

- Over 80 percent of high school students work during their high school years. The majority of these students work in either the retail or food service industries -- industries which typically do not pay very well and have relatively few career ladders. Can this work experience, nevertheless, be integrated into an overall school-to-work system? How can these employers be recruited into a more structured learning experience for their student-workers?

- Should the state offer any incentives for businesses involved in school-to-work programs such as tax exemptions for purchases of related equipment or other materials involved in student support?

- Should some form of school-to-work advisory councils be established to guide the recruitment and involvement of business?

- How would businesses involvement in school-to-work programs be coordinated with their participation in other local work force related councils?

❑ ***Labor Market Information, Occupational Standards, and Certification***
Timely and accurate information about the skill and competency demands in the workplace, employment opportunities in the labor market, and skill

standards in various occupations are important components of an effective school-to-work system. Important questions for policy-makers include:

- Does the state have an effective process of collecting and disseminating accurate Kansas labor market information including areas of employment growth, wage levels, and skill demands? If not, how should the state develop such a capacity?

- Does the state have an effective process of developing and updating occupational standards that reflect the ever-changing demands of the workplace? How can the state integrate this information into curriculum design and student counseling activities?

- In many school-to-work programs, the attainment of an occupational certificate is fundamental. It demonstrates that the student possesses the requisite skills and competencies. Should the state develop such a certification system? Should the certificate be awarded by the state or school district? How would it relate to the current high school diploma?

❑ ***Costs of School-to-Work Programs and Associated Funding*** Changes in the state's educational system and introduction of new school-to-work programs will likely result in new expenditures. These include staff development, recruitment of businesses, capital expenses, and development of new curricula and assessment. In some initiatives, expenses will have to be borne by business. Can the state absorb these costs in its current budget or will additional revenue need to be generated? Financing issues include:

- Does the state's current school finance formula provide a means for supporting "school-to-work" programs?

- Can the state ask businesses to bear the whole cost of work-based opportunities for students? If businesses do assume the full cost, should the state or local unit of government provide any incentives such as for the purchase or maintenance of equipment and materials used by student-employees?

❑ ***Job Placement Services*** A school-to-work system includes, at least in its design, a promise or enhancement of employment opportunities and growth. This is the very purpose of having such a system. Does this inherent foundation make it requisite that school districts take an active and dedicated role in placing students in employment? Policy questions include:

- Should one performance measure of a school or school district be its success in placing students not going on to university study in a related occupation? Such a requirement already exists for vocational-technical schools.

- What role can business play in placing students in employment?

❑ ***Benchmarks and Evaluation*** An effective evaluation process that provides accurate, concise, and useful feedback to educators, administrators, legislators, and the private sector is a vital component of any school-to-work system or program. This evaluation system should include empirically-developed "benchmarks" -- standards on which our students' achievement should be judged. A continuous assessment of the system can help ensure a meaningful contribution to achieving the long-term goals of school-to-work. Policy questions concerning this evaluation process include:

- How and by whom should the benchmarks be developed? Should there include grassroots input or should benchmarks be developed at the state-level?

- On what standard or level of excellence should these benchmarks be based? Should they be based on student achievement and competitiveness at a local, state, national, or international level?

- How should the information from the evaluation program be connected to the school-to-work program? Who is responsible for making adjustments as necessary?

4. Issues Particular to Work-Based Learning

Approximately eight to nine students out of ten will work sometime during their high school years [see results of survey conducted by Kansas Inc. in Appendix A]. This work is most often done at either retail or food service companies and may occupy more than 30 hours a week of the student's time. This work is also rarely connected to the student's educational objectives. The issue for work-based learning, therefore, is not simply to provide the opportunity to work but rather to create a work environment where constructive, valuable learning can occur.

The inclusion of a work-based component into any school-to-work initiative raises many additional policy issues.

- *Integration of School-Based and Work-Based Learning* The inclusion of a work-based component makes it imperative that the students two learning components -- one in the school with educators and one in the workplace with employers -- be coordinated well. It is essential that these two parties work together to ensure an effective educational experience for the student.

  Who is responsible for the development of curriculum and related learning experiences in the school and at the workplace? Do educators and employers have equal authority?

  How and by whom is a student's performance at the workplace judged? Does the employer have full authority? What standard of performance is used at the workplace?

  What additional responsibilities should be vested in the employer?

  How does the educator's partial or complete relinquishment of oversight over the student during the work-based component affect the teacher's position in the school system (e.g., compensation, promotion, overall authority over student progression)?

- *Overall Cost to Industry* The employer's active and substantive involvement in work-based learning is fundamental. Employers must make significant investments of time and money in these programs. Important issues concerning the recruitment of employers are:

  Should the State offset any of the cost an employer must contribute in creating the work-based component? Should these include direct financial support or some type of tax incentive?

  Should paid work-experience be a requirement of youth apprenticeship program considering the significant start-up costs for the employer? Paid work-experience is a required component of the federal program.

- *Student-Learner Compensation* The federal Fair Labor Standards Act (FSLA) requires the payment of minimum wage. There are exemptions for student-trainees. The key determinant is the type of employment in which the student is engaged; in other words, is the student a regular employee, trainee, or learner. The payment of stipends in place of

regular pay have been included in some apprenticeship programs.

Should the state require employers to pay the student or is some other type of compensation appropriate (e.g., stipends)?

How does any compensation received by the student affect a family's income eligibility for certain social-related programs?

How will labor unions react to the introduction of "low-wage" employees? Should and can guarantees be given to ensure that student-workers will not displace current workers?

- *Costs of Transportation* Students would be required to travel from school to the employer's place of business for the work-based component. A student's transportation from school to work can be accomplished either by the student/parent or the school through mass transportation. Either the student/parent or school will inevitably incur this expense.

  How will students be transported to the location of the work-based component (e.g., student's own car, public transportation, regular school buses)?

  Who will finance the transportation?

  Who is liable during transportation from school to the workplace: the school, student, employer?

- *Unemployment Insurance and Liability* The application of unemployment insurance for student-workers and liability for students' products are key question that would be raised depending on the condition and role of employment. The practice in other states have indicated that UI payments are not required for students and product liability rests with the employer. Kansas should also address these issues.

- *Child Labor Laws* Federal and state laws exist regarding the employment of youth. These laws restrict who and how students participate in youth apprenticeship programs. The general stipulations in federal law are:

  Ages 14 or 15: A minor must be at least 14 years of age to be employed in specific occupations outside of school. Generally this age group is

allowed to work in only retail, food service, or gas establishments.

Age 16: Sixteen years of age is the basic minimum employment age. Youths may be employed in any occupation except those deemed hazardous by the Secretary of Labor.

Age 18: Minimum age for employment in nonagricultural occupations declared hazardous by the Secretary of Labor.

[Source: Jobs for the Future]

Time and hour restrictions also exist in federal law. These various occupational restrictions need to be examined while crafting work-based learning opportunities.

Appendix A
Survey on Work Experiences of High School Students

❖

Kansas Inc. sponsored a survey of the high school students at Turner Unified School District in Kansas City to identify how many students were currently working and what was the nature of that employment. The survey, developed by Kansas Inc. staff in coordination with the high school's guidance counselor, consisted of nine questions. These questions generally asked whether the student was working, how much, and for what type of company. Surveys were distributed to all high school students (10th through 12th grade) by the counselor's staff from which 288 completed forms were returned. Results from other school districts would undoubtedly be somewhat different but these results correspond quite closely with those reported in national literature.

Findings

- Approximately 73 percent of seniors, 58 percent of juniors, and 31 percent of sophomores were employed at the time of the survey.

- Over 87 percent of current seniors have been employed at some time during their high school years (10th through 12th grade). Approximately 85 percent of juniors and 53 percent of sophomores have been employed during their high school years.

- Nearly one-third of the high school students that have been employed sometime during the current academic year have worked, on average, over 30 hours per week.

- Approximately two-thirds of the high school students that have been employed sometime during the current academic year have worked, on average, over 20 hours per week.

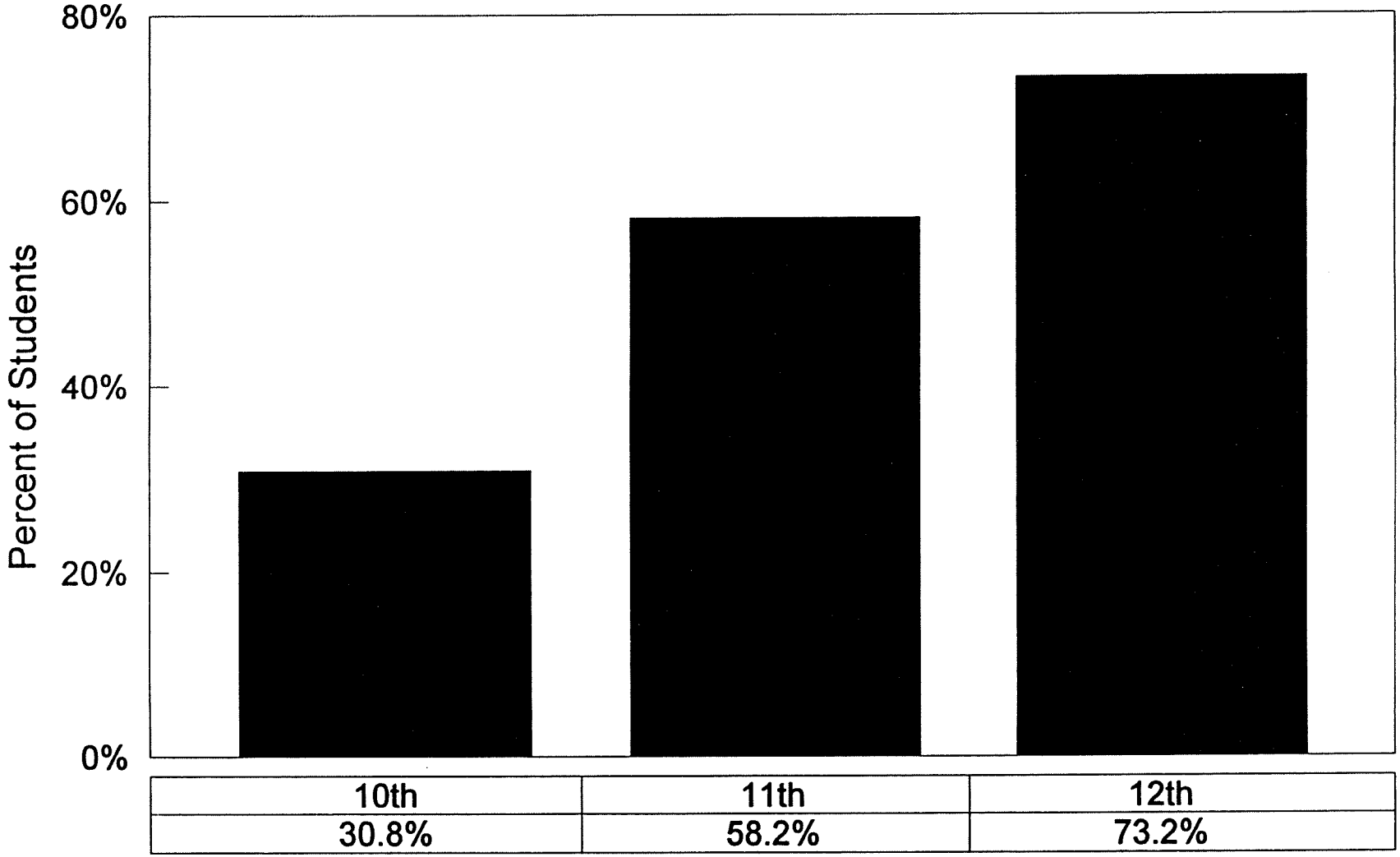
- Over 71 percent of students who have worked during the current academic year have been employed at either a retail business (33.8 percent) or food service establishment (37.2 percent). Only approximately 11 percent of employed students have worked at either a service or manufacturing company.

- Of the students who have averaged over 30 hours per week at work, approximately two-thirds reported that they had equal to or less than a "C" average. Only 15.9 percent of those students working over 30 hours per week had an "A" average.

Economic Development
January 12, 1994
Attachment 2

Percent of Students Currently Working

(Turner U.S.D. 10th through 12th Grade Students)

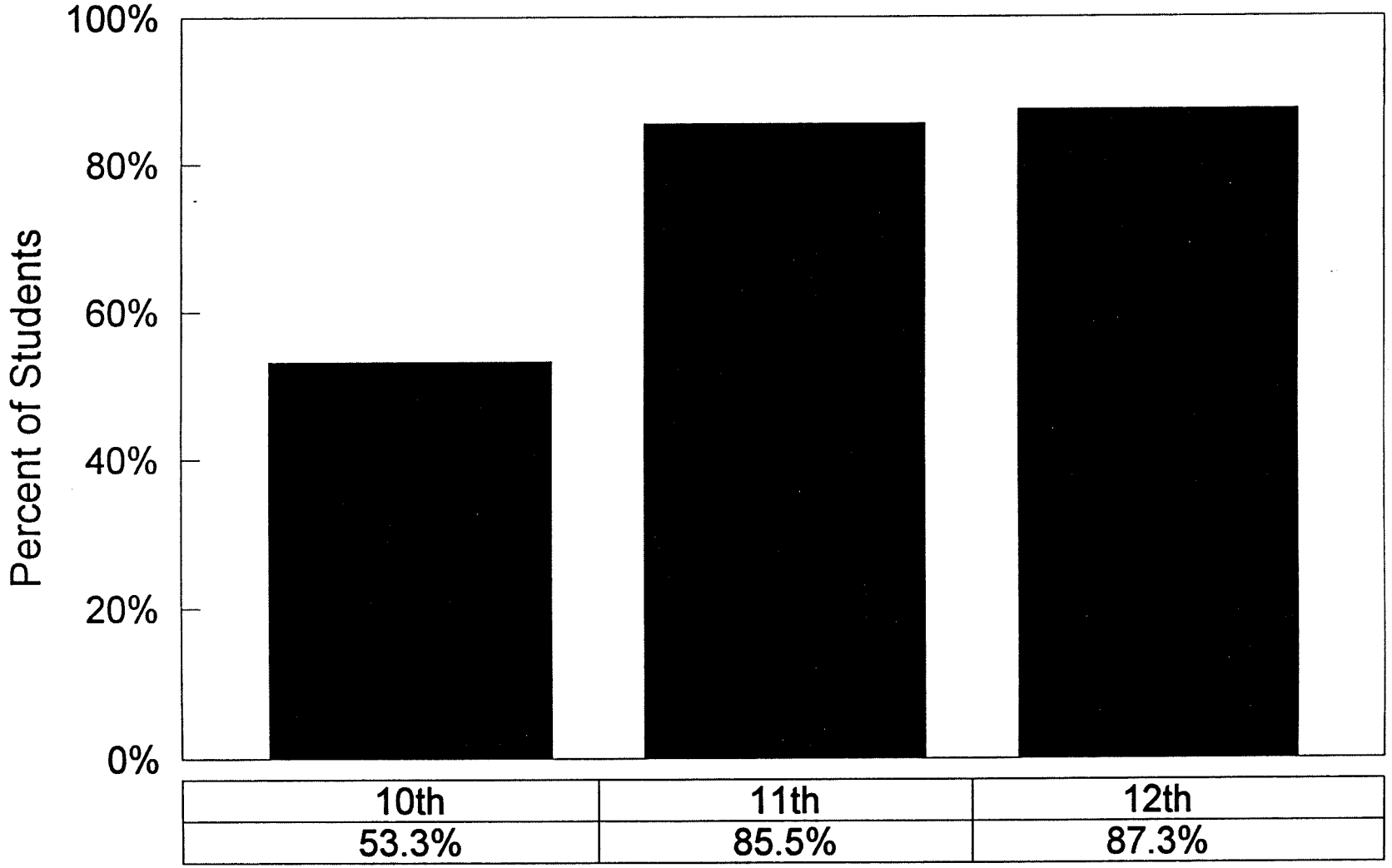


10th	11th	12th
30.8%	58.2%	73.2%

Kansas Inc.

Students Who Have Worked in High School

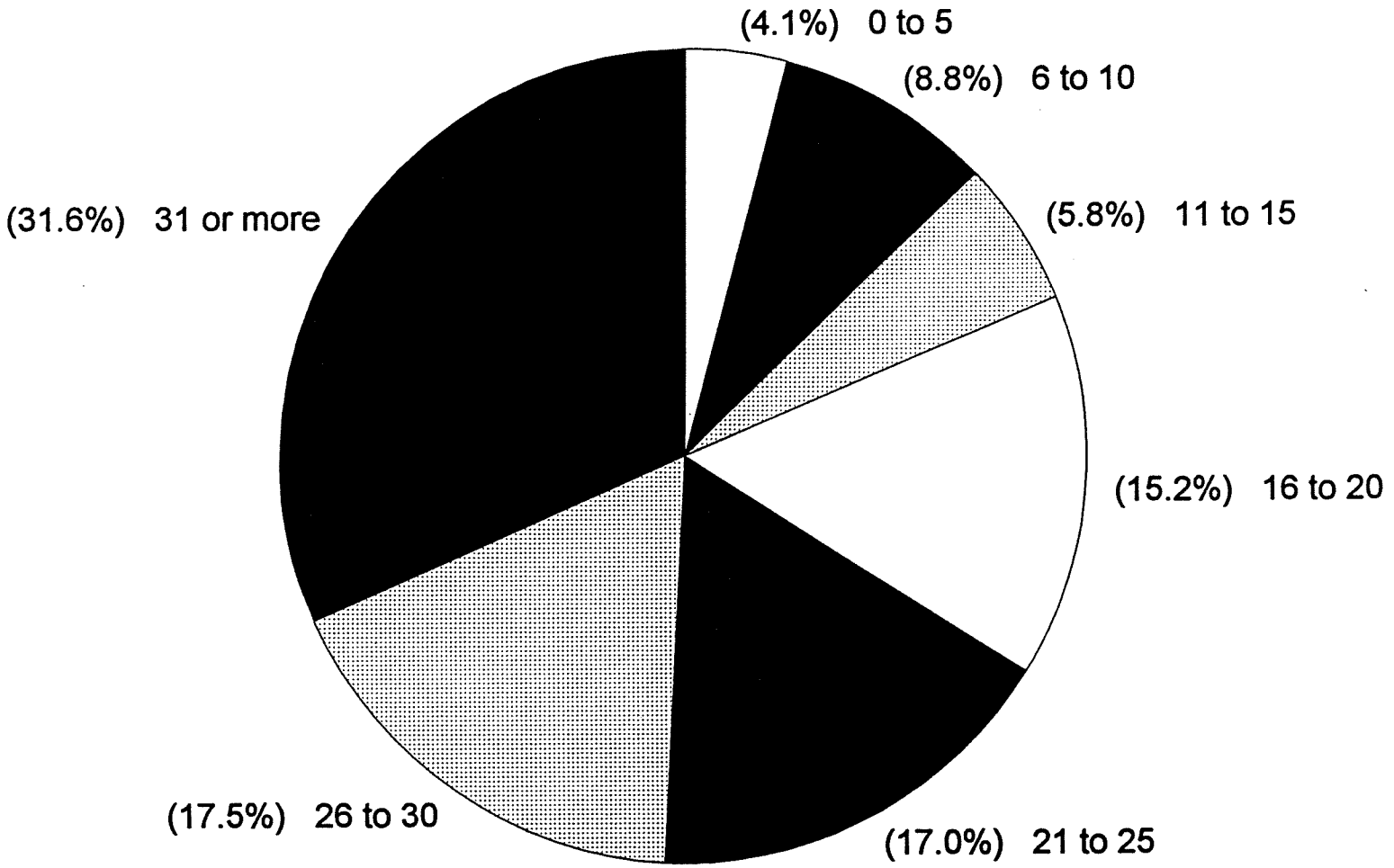
(Percent of Turner U.S.D. 10th to 12th Grade Students)



10th	11th	12th
53.3%	85.5%	87.3%

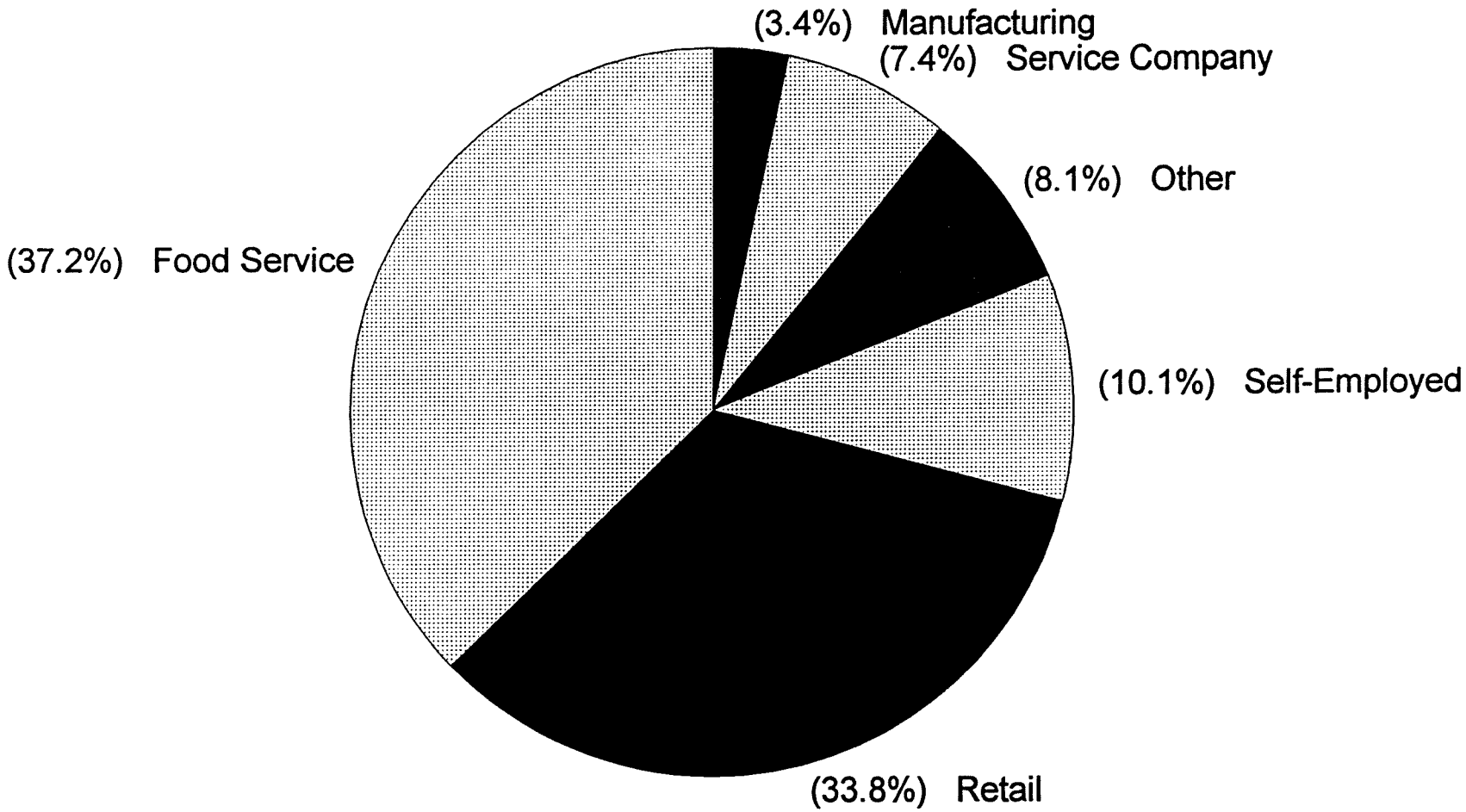
Number of Hours Worked by Students

(Average Hours Worked Per Week - Turner U.S.D. 10th to 12th Grade Students)



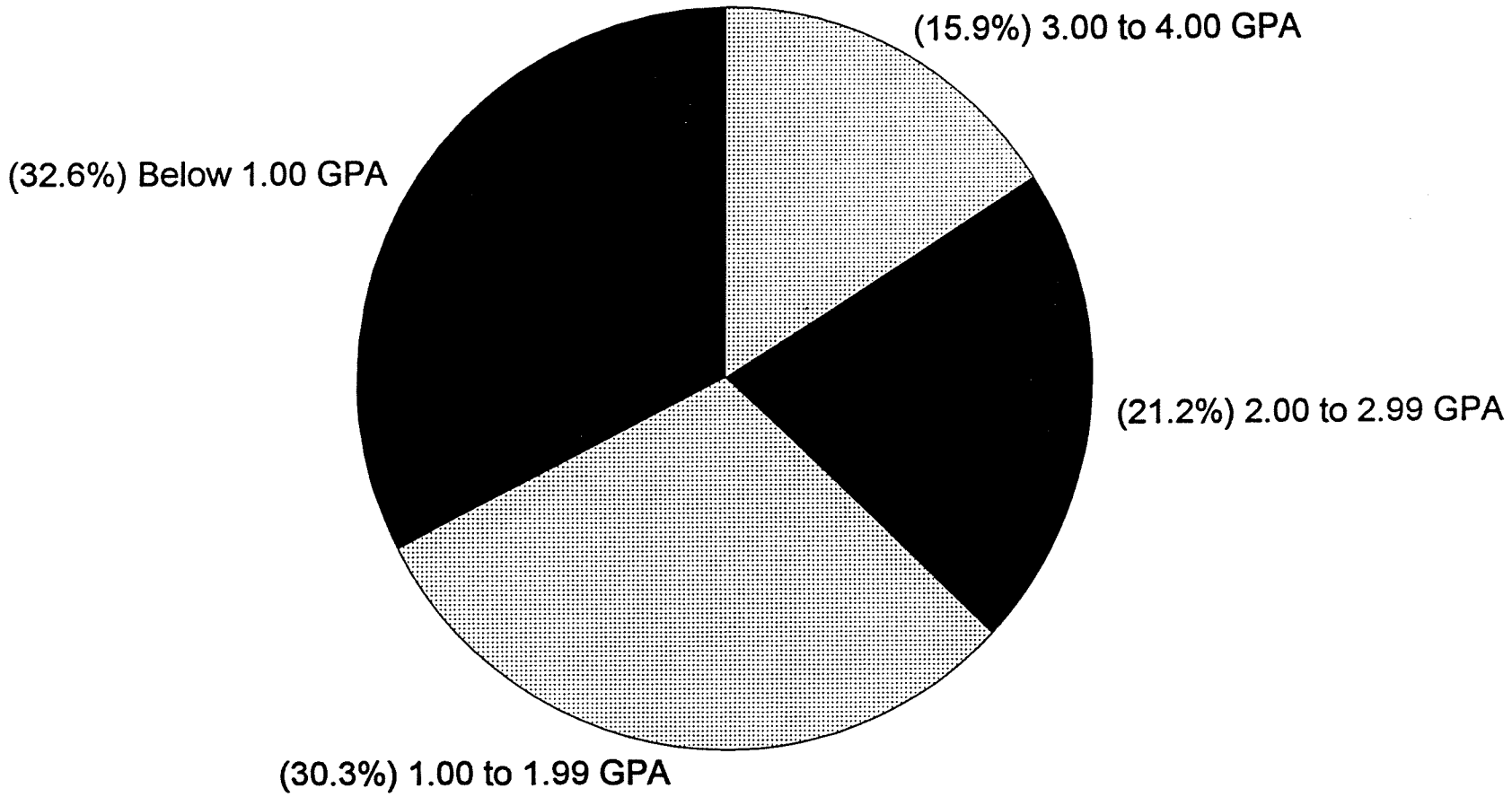
Student Workers and Employment Type

(Percent of Students Working by Type of Company - Turner U.S.D. 10th to 12th Grade Students)



Working and Grades

(Students working 31 or more hours per week by grade average - Turner U.S.D. 10th to 12th Grade Students)



Nation needs 'neglected majority'

Consider two Kansas high school seniors. One plans to attend a regents university next fall and would like to be a lawyer. The other isn't sure what she wants to do after graduation, but won't go to a four-year college.

After the university-bound student talked to a guidance counselor in ninth grade, she was funneled into a college-prep program recommended by the Board of Regents. She took solid courses in English, math, science and foreign languages. She was enrolled in classes with similarly motivated students. Teachers and counselors took a special interest in her and encouraged her academic and career ambitions.

DAVID AWBREY

EDITOR OF THE EDITORIAL PAGE

High school was a different experience for the non-college bound student. She was shuffled into general education courses, which she felt were mostly pointless and boring. She quickly perceived that teachers and administrators saw her as just another girl in the generic, faceless high school crowd. About the only "career" counseling she received was a suggestion her junior year that she should take a parenting and family course. She will leave school this spring with no marketable job skill and no idea what to do with the rest of her life.

The second student is a member of what Ray Marshall, former U.S. Labor secretary, calls "the neglected majority" — part of the 75 percent of American high school graduates who won't receive a four-year college degree.

The point is that American schools do a generally good job preparing young people for college. That's especially true for Kansas, which usually ranks in the nation's top 10 in average scores on college admissions tests.

Kansas employers, however, complain about poor academic skills and lax disciplinary habits of many job-seeking high school graduates.

In other words, the system works pretty well for ambitious and bright young people, the ones who know how to play the game and will eventually receive four-year college degrees. Yet such students constitute only 25 percent of a typical high school graduating class.

The rest, according to a report by the U.S. Labor Department, "receive little guidance on how to move into a career that can support a family. Their reading, writing, math and communications skills are largely inadequate for the demands of today's quality employers."

The 'high-performance worker'

Many of the nation's economic problems stem from the inability to properly educate and provide attractive job opportunities for non-college young people. As a result, the income gap among young Americans is increasing, aggravating the country's already severe class divisions. In the 1980s, for instance, the average salaries of men with college degrees rose slightly while high school graduates saw their pay decline by 9 percent and high school dropouts suffered a 12 percent wage drop.

Felipe Galindo

The failure to provide meaningful, job-related schooling to non-college youth also threatens the nation's economic future. As evident in the recent debate over the North American Free Trade Agreement, almost any U.S. factory job that can be accomplished by a low-skilled Third-World worker either has left or is probably leaving the country. That trend is irreversible.

Today's industry demands, in the new jargon, "a high-performance work force." That means workers with competent scholastic abilities who have learned how to learn, can take initiative, can work together and are dedicated to producing top-notch, world-standard goods and services.

Fortunately, many business, education and government leaders understand the problem. In its strategic plan released last fall, Kansas Inc., the state economic development agency, focused on the need for apprenticeship and other worker-training programs. Along that line, U.S. Education Secretary Richard Riley will be in Wichita Thursday to help launch a school-business coalition to boost education reform in Kansas.

Riley also will push the Clinton administration's "school-to-work" legislation that would promote high school programs linking academic courses with on-the-job experience.

In fact, an example of what the administration wants to see nationwide is the proposed apprenticeship program in the Wichita school district that would put high school students in the pipeline toward careers in the aviation industry.

A question of status

Experts say that most good jobs in the next century will require a sound high school education and at least some post-secondary training.

Indeed, the greatest barrier to a world-class work force is the attitude that keeps vocational training as the poor cousin of education. Kansas, for example, spends thousands more dollars a year on 19-year-old students at regents universities than on 19-year-old students in vo-tech schools — to say nothing of the huge prestige gap between the two types of institutions.

There also is no coordination among community colleges, vo-techs and the regents universities. Rather than an integrated post-secondary education system, Kansas has a gaggle of colleges and schools that eye each other suspiciously and jealously guard their own turf.

A good example of the situation in Kansas came last month when the Board of Regents and Gov. Joan Finney recommended bringing Washburn University into the regents system and boosting spending on the regents schools by $13 million next year. There is no evidence that either the board or the governor considered the overall needs of post-secondary education in Kansas while drafting their expensive proposal.

The 1994 Legislature, which begins this week, should undertake a comprehensive review of work-force training and post-secondary education in Kansas. At a time of increasingly tight financial resources and increased demand for educational services, Kansas must target every school dollar to ensure maximum beneficial impact.

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SCHOOL-TO-WORK TRANSITION: WORK HAS A RESPONSIBILITY TOO!

Background

First, to respond to Mr. Warren's comments about the school-to-work programs, I would like to tell you about the current programs in our schools. Our data show that cooperative education, which is one type of school-to-work program, is offered in 82 of our 304 USDs. These 82 USDs provide 198 cooperative education programs. Ten vo-tech schools offer 68 coop education programs and fifteen of the community colleges make 41 cooperative education available to students.

In addition, the Tech Prep program, or sometimes called 2+2, is available in twelve consortiums across the state. Tech Prep is a four-year sequence of study beginning in the 11th year of high school and continuing through two years of postsecondary occupational education. When the student leaves school, he or she has a certificate or associate degree. Currently there is no component for paid work experience in the Tech Prep program.

The majority of vo-tech schools offer a program called Occupational Work Experience or 85/15, which is designed to have the student work on the job site for a block of uninterrupted time. Eighty-five percent of the student's time is spent in a classroom, shop, or laboratory, with the remaining time in a related work place.

Some of these programs integrate the learning and working experience as needed in the workplace. There are some schools that have developed a very good linkage to the work world. However, there is not the highly structured process to help all learners make the transition from school-to-work or from work to retraining as found in other countries. In Germany and Japan there is a strong conscious connection between school and work. In Germany, counseling about job and the world of work starts early and concludes with an apprenticeship practice which combines school work and on the job instruction. In Japan, the schools themselves select students for referrals to employers.

The basis of this presentation is (1) Eileen Appelbaum and Rosemary Batt's *High Performance Work Systems* (Washington, D.C.: Economic Policy Institute, 1993) and (2) *Learning to Learn: Survival for U.S. Manufactures* (Washington, D.C., APICS, July 1993) and (3) William H. Davidow and Michael Malone's *The Virtual Corporation* (New York: Harper Business, 1993).

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Although the Japanese and German models appear to foster human resource capitalism, I do not recommend Kansas adopt any system that supports dual education -- work bound vs college bound students -- nor the repression of creativity in students or workers. However, there are key features of Japanese and German systems that Kansas can use in its seamless system for lifelong learners.

Second, whereas Mr. Warren has articulated the role of "school" in the school-to-work transition, I would like to talk about the work world which will have to exist for our schools' products -- our labor force -- to be able to apply their high skills. As many of you know, the SCANS work skills drive the high academic performance component of Quality Performance Accreditation.

High Performance Work Systems

Similar to the reform or restructure decision that had to be made about education, American, and especially Kansan companies, must realize from the last two decades that economic competitive challenges cannot be met through marginal reforms of the mass, productive system. These marginal changes, like education tinkering with a school curriculum or changing the student-teacher ratio, have made mass production somewhat more flexible, but leave work organization and decisionmaking essentially unchanged as businesses continue to compete on the basis of price. According to a 1993 Sloan Foundation study, a successful strategy for competitiveness in markets that expect quality, service, variety, and timeliness to be delivered in a cost effective manner requires that the production system be transformed, the relationship between employees and management realigned, and the institutional framework restructured. This is the market in which most of our firms will compete.

Like in education, there are many reasons why the old way of doing things, which worked so well for companies and workers in the past, is no longer adequate. Two, in particular, stand out. First companies in the newly industrialized countries, and even in the less developed countries that pay a fraction of U.S. wages, are now able to compete successfully in price-conscious market for standardized products. Second, the increased capacity for customization and diversity inherent in microprocessor-based process techniques has reduced the cost advantages of mass production and increased competition in quality-conscious markets.

The challenge for our businesses is to master these new sources of competitive advantage, so they can continue to produce in the U.S. and Kansas and remain profitable. They must replace mass production systems with new, high performance work systems that achieve continuous improvements in quality as well as efficiency and that utilize new forms of organizational learning that mobilize the knowledge and problem-solving abilities of front-line employees. Many firms have responded to these challenges by adopting performance enhancing strategies. Unions and workers have also recognized that businesses will not survive and jobs will disappear unless fundamental changes in the organization of production occur.

Reviewing the research points to the emergence of two distinct and coherent models of high performance work systems in the U.S.: an American version of lean production, which the Japanese use, and an American version of team production.

1. The Malcolm Baldridge Award, which outlines an American version of lean production, is designed to shape managerial behavior and to improve business performance. It encourages firms to focus on quality and customer service and to reengineer their internal work systems backwards, beginning from the customer's perspective and requirements. Modeled after the Deming Award in Japan, it promotes an American-style lean production in the U.S., but without Japanese-style human resource and industrial relations institutions.

2. The American model of team-based high performance incorporates a real redistribution of power and authority in the workplace. Because of their intimate knowledge of the work process, workers rather than managers or engineers are best equipped to organize work with a given type of technology. The main features of this model are:
   - Sociotechnical organization of work in which the basic production unit is a team.
   - Employee participation in human resource issues such as selection of work unit participants, training, and compensation systems. For example, teams at Saturn do their own hiring and are responsible for developing and administering policies regarding absenteeism and replacement of absent workers. Also training budgets are extensive. At Corning, 15 percent of worker time is budgeted for just training.

- Industrial relations built around joint labor management decisionmaking structures. At Saturn the partnership between the union and the corporation encompasses strategic planning at the corporate level.
- Total quality principles which involve the use of such technologies as quality process improvement, just-in-time inventory systems, and statistical process control. Corning and Saturn both incorporate statistical process control responsibilities into the jobs of front-line production teams. Also customer feedback is built into the quality control system at both companies. For example, Saturn's on line tracking system tracks all repairs at dealerships, quickly picking up any problems that have made it out of the factory.

SUCCESS OF HIGH PERFORMANCE WORK SYSTEMS

There is a lack of systematic evidence on the outcomes of these two models of high performance work systems. Like quality performance accreditation of schools, this lack of evidence of success is in part a product of the newness of the models. Just five years have lapsed since the first Baldridge Award, even less time since the production of the first Saturn car. Most of the evidence of improved performance currently available is self reported by business managers, though it should be noted that the Baldridge Award has stringent requirements with respect to measurement and record keeping on an array of performance measures.

Performance gains reported by companies that have transformed the production process is impressive. Managers report improvements in quality, such as reductions in cycle time, defects, and waste; improvement in customer satisfaction; and some report improvement in productivity and gains in market share or return on investment. For example, Xerox reported that defects in component parts dropped from 10,000 parts per million in 1980 to 360 in 1989. Corning, which had slipped in its return on investment in the 1980s, increased its return to 15 percent in 1991, putting the company back in the top quartile of Fortune 500 companies.

Unfortunately most businesses are like schools. They have undertaken only piecemeal or marginal changes in production systems to date. Significant changes in work organization at American businesses affect a meager 2 percent of U.S. workers, according to Tony Carnevale. Carnevale estimates that only 13 percent of American employers

have organized employees in high performance work systems that de-emphasize hierarchy and emphasize collaboration and teamwork.

Yet these skills -- teamwork, collaboration, decisionmaking, mathematics, communications -- are the ones Quality Performance Accreditation wants our students to have as they enter our workforce. In November and December, over eighty Kansas business representatives -- CEOs and personnel managers -- reaffirmed their need for the worker who has basic skills, thinking skills, teamwork skills, use of information skills; but, as noted in the previous paragraph, only 13 percent of the employers have restructured their business to allow these future workers to use their skills.

BARRIERS TO IMPLEMENTING HIGH PERFORMANCE SYSTEMS

Why, despite the accumulating evidence that those companies that invest in work reorganizations involving front-line workers in decisionmaking and upgrading worker skills do achieve high payoffs in productivity and efficiency and increase their ability to get products to market quickly, is change so slow to spread in the U.S. and Kansas? There are five major reasons:

1. Many firms find it difficult to undertake fundamental organizational change and have succumbed to the temptation to take the low wage path. Many firms have responded to the pressures for change coming from increased competition by attempting to make mass production more flexible. The small medium-sized firms that engage in such work as metal stamping, molded plastic parts, or high volume machining and large firms that produce high volumes for mass consumption have made mass production more flexible. Flexible mass production includes technology, cross training of skilled workers, and the use of subcontract to achieve flexibility in responding to market demand. But flexible mass production retains hierarchical management structures, old power relations between managers and workers, separation of conception and execution, and routinization of work.

   This strategy does improve competitiveness through somewhat better use of technology and skilled workers and driving down payroll costs. However, this strategy of flexible mass production is not successful in the long run for competitiveness of domestic enterprise. Flexible production, whether in mass or lower volume, still competes primarily on the basis of price. Yet the lower limits to which wages can be pushed in advanced industrial economies are

well above wages paid in other parts of the world. Productivity gains made by shrinking the company and closing the least efficient facilities may give the firm an immediate boost, but does not set the stage for continuous improvement.

2. New technology does not dictate what companies should do. In other words, computers and information technologies can be used either to upgrade workers' skills or to deskill them. In the words of Shoshana Zuboff's *In the Age of the Smart Machine, The Future of Power and Work* (1988), the new technologies can be used either to "automate" or to "informate."
3. Firms, managers, and unions have incentives to resist the challenge of change. Sharing power, authority, responsibility, and decisionmaking is uncharted territory for most managers, and many are reluctant to cede power to workers on and off the shop floor. Companies that reorganize work systems must define the new roles for management.
4. Many unions now recognized the value of participating in decisionmaking. As the central conflict between labor and management has shifted from wage bargaining to job saving, unions have recognized the need to represent members' interest by taking proactive rather than reactive stance to corporate decisions that affect the ability of the company to remain profitable in an increasingly competitive environment. However, the unions have concerns about two levels of participation: whether to support worker participation in management -led committees, such as problem-solving teams, and whether the union should participate in joint union-management structures.
5. The institutional framework of the U.S. with its training system, capital markets, and labor law is adapted to the old organization of production and does not provide appropriate supports for the emerging high performance work system. Unlike its foreign counterparts, the U.S. system is characterized as "permissive." In other words, institutions neither require nor support change -- which may account for the difficulty businesses face in making change.

   For example, unlike German firms, U.S. firms are under no legal mandate to share company information with employees or to allow employee representatives to participate in corporate decisions about the choice of new technology. Nor, like the Japanese or Swedish counterparts, U.S. firms do not have access to an infrastructure of organizations capable of diffusing new

ideas and work practices, such as the Japan Federation of Employers' Association or the Swedish Employers' Confederation.

The absence of an infrastructure that supports workplace change means that major organizational transformations are more likely to occur in response to crisis conditions than as a result of the implementation of a shared vision. Firms that adopt work reforms in crisis situations often are unable to make long term commitment to their workers or customers.

With no institutional setting that reduces or shares some of the cost of moving to high performance systems, it is unprofitable for businesses to make the change. The design of a transformed organization and the retraining of employees that is required to implement the change imposes high costs on firms in terms of money and time. These up front costs hinder the ability of all but the most convinced or most desperate companies to change.

Finally, those firms that pursue a low-wage low-skill competitive strategy create an obstacle for those that wish to implement more innovative approaches in production, work organization, and employee involvement. Those firms attempting to make fundamental changes are undermined in the short run, before the improvement made possible by these changes have materialized, by low-wage competitors. Predator pricing by low-wage competitors can threaten the survival of the transformed firms, or at least of the innovations they have adopted.*

Summary

If the school-to-work transition is to be successful, it is very dependent on both business and education. We -- Charles Warren, you the committee, and I -- need to study in depth three areas for potential policy setting:

1. Job Training: To support a workforce that produces continuous improvements in production requires training opportunities that go beyond individual programs. Employees must be able to return again and again to formal training as needed throughout their lifetime and to integrate this process into the normal course of their working lives.

*Dan Luria, "Identifying High Performance Work Organizations," Industrial Technology Institute, 1992.

2. Partnership Between School and Work: Providing only work experience is not enough. The school and work place must collaborate on promoting lifelong learning, focusing on production increase through use of "informate" technology and professional growth, and providing the opportunity for commitment to a company through a career ladder.
3. Building Interfirm Collaboration and Quality Standards: There needs to be some process to facilitate network relations among businesses to enhance research and development, the adoption of new technologies, and the provision of related technical training.
4. Rule Out the Low-Wage Path: It can be unprofitable for an individual firm to transform its production system -- despite the efficiencies of team-based production, total quality management -- if it can be undermined in the short run by businesses following a low-wage strategy.

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NEW DEVELOPMENTS IN SCHOOL-TO-WORK TRANSITION

By Scott Liddell

Background

85% of high school students will not graduate from college.

A cornerstone of the Clinton administration's economic philosophy is the belief that the skills of American workers must be improved to make this nation more internationally competitive. Proof of this need is provided annually by the 85 percent of high school students who do not attend or do not graduate from college and enter the workforce without marketable skills. Studies show large numbers of these young people will spend years wandering from one short-term job to another before finally gaining a career toehold in their late 20s. To lessen this unfulfilling drifting and lay a solid foundation for the American economy of the 21st century, classroom lessons must have some utility in the workplace.

Youth apprenticeships provide real-life job training.

Several states have sought to provide all their students with exposure to the world of work. They have developed small-scale versions of European-style youth apprenticeships that integrate traditional classroom-based curricula with paid training in a real-life job setting. The National Alliance of Business estimates some 1,700 American youths are currently apprenticing with 200 companies nationwide. In terms of trainees and the number of occupations available to them, however, the impact on students and the economy of scattered, local American school-to-work programs pale in comparison with the nationwide integrated systems used by international competitors like Germany, Denmark and Sweden. Each year, two-thirds of all German high schoolers, some 1.7 million students, receive actual workplace experience in one of 380 occupations leading to nationally recognized credentials awarded on the basis of demonstrated ability.

To replicate the widespread nature of these European systems in the United States (though not necessarily their content or structure), the U.S. departments of labor and education have introduced a nationwide School-To-Work Opportunities initiative designed to promote:

- ✘ School-based studies.
- ✘ Experience at an actual worksite.
- ✘ Activities to connect the lessons learned at each site.

Funding for the first year of school-to-work activity comes from existing labor and education programs. Legislation now before Congress would ensure funding sources for future years.

Under this initiative, states are to be encouraged to tailor their school-to-work efforts to their own unique economic circumstances. To help states build upon existing and future plans, the federal departments will contribute grants, technical assistance, and waivers of some federal training and education funding requirements.

Federal grants will go to states with promising pilot programs.

Federal development grants of up to $1 million to design the administrative framework of a statewide school-to-work system have been distributed to every state. Second-stage implementation grants will be awarded on a competitive basis later this spring to five to 10 states with promising pilot programs. The secretaries of labor and education have been authorized to set maximum and minimum awards for these grants. Current plans call for all 50 states to receive implementation grants within the next four years.

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Last fall the U.S. General Accounting Office (GAO) released the results of its review of school-to-work efforts in all 50 states and the DISTRICT OF COLUMBIA. The GAO sought to determine which programs met its definition of a comprehensive school-to-work strategy (similar to that outlined by the administration's school-to-work guidelines). Comprehensive school-to-work strategies:

- ✘ Develop academic and occupational competencies of all students.
- ✘ Provide career education and development for all students.
- ✘ Feature extensive links between schools and employers.
- ✘ Furnish meaningful workplace experience for all students.

According to the GAO, FLORIDA, OREGON, TENNESSEE and WISCONSIN have addressed all of these points to some degree and "have enacted statutory provisions requiring state officials to develop and implement strategies." Elsewhere, MICHIGAN, MINNESOTA and WASHINGTON have bills pending that would address these criteria; NEW YORK has submitted a plan to the state education board of regents; CALIFORNIA, RHODE ISLAND and VERMONT are developing plans for submission to their legislatures; and ARKANSAS and NEW JERSEY have enacted legislation calling for the development of comprehensive school-to-work systems.

As states have progressed through the development process they have uncovered a number of problems that will have to be addressed before they can establish large-scale systems:

- ✘ Labor laws, particularly regarding workers' compensation, restrict the employability of some high school-age students.
- ✘ Employer reluctance to train students because of the time and cost involved in supervision.
- ✘ University entrance requirements that may not recognize work-based credits.
- ✘ School officials and teachers who lack contacts in the business world, making placement of apprentices more difficult.
- ✘ Parents who stigmatize apprenticeships as a form of vocational education that would preclude college for their children.

There are some barriers--such as labor laws--to establishing large-scale systems.

Obstacles like these result from the complex interactions between schools, businesses, organized labor and governments within an integrated school-to-work system. Policymakers will need to re-evaluate and possibly revise current requirements on matters ranging from curricula to graduation standards and certification to labor law. Critical aspects—access to training for all students, breadth of instruction, clearly defined standards of teaching and performance, portability of credentials—must be constantly reaffirmed to deliver the broadest possible benefit to states and their young citizens. State legislators need to be aware of the federal school-to-work initiative and become involved in efforts to adapt to the modern global economy that rewards the possessors of high skills.

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Jan 9, 1994 The New York Times (Sunday Special on Education)

American business says schools are not producing enough skilled workers, so it's widening its own role

Industry's New Schoolhouse

By Gary K. Eisler

Yvonne Buchanan

THEY PARK beneath the gray Toledo sky and slog toward the Chrysler Assembly Plant and the droning production line, as their fathers and grandfathers did when the factory was the Willys Overland plant. But as these workers approach the looming walls and smokestacks they are greeted by something new. It is a Harley-Davidson motorcycle, resplendent in glistening chrome. Beside the bike is a young woman, warmly suggesting something few real men could refuse: Sign up here, she says — for a class in motorcycle mechanics.

The class is presented after work, free, in one of the company classrooms. If you don't like motorcycles, how about a real estate license or learning WordPerfect? And if the worker lacks the basic reading or math skills to master the course — no problem. Tutors are waiting to help. "If we just offered reading and math, no one would participate," said Jerry Huber, the plant manager. The company had to destigmatize remedial training, making it "non-threatening."

Welcome to the 90's, where almost anything goes to bring the work force up to world-class standards. To stay competitive, United States industries know they must have a highly skilled force, but believe that America's education system is not adequately producing one. "The cliché is of the American whose VCR keeps flashing 12:00 because they don't know how to program it," said Margot Brown, manager of media relations for Motorola Corporation.

Tough Competition

American companies say they have a difficult time competing with countries like Germany and Japan with an undereducated work force, because a higher level of education is required to communicate in the teams now used in manufacturing, as well as higher math and reading skills to understand instructions and operate equipment. Yet despite a greater proportion of gross domestic product spent on education here than by either of these rivals, Americans' test scores are only moderately higher than the industrialized nations' average in reading, and below their average in math.

In 1988, the latest year for which comparable figures are available, the United States spent 5.7 percent of G.D.P. through government expenditures (exclusive of gifts, grants, tuition and endowment) on education, compared with 4.7 percent for the Japanese and 4.2 percent for the Germans, according to Vance Grant, a specialist in education statistics for the Federal Department of Education's Office of Education Research. By the time total spending on education is calculated, including expenditures on private schools, which he said were higher in the United States than in many other places, the amount was 7.8 percent of G.D.P. in 1992-93. "In spending, we're competitive," Mr. Grant concluded. But he indicated that for what the United States spends, its results should be better.

So, some businesses are tak-

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ing things into their own hands. Half the small companies and nearly three-quarters of the large ones in the United States now have some sort of skills upgrade program, according to Phyllis Eisen, an official of the National Association of Manufacturers. Industry is spending $40 billion a year educating and training employees, much of it in remedial education.

Harry Featherstone, president of the Will-Burt Company, which manufactures auto parts in Orrville, Ohio, is a leading advocate of educating employees. The company brings in professors from the University of Akron to teach "core competencies," which are basic math and reading skills, on company time. The basics last six months to a year, four to five hours a week. So far, all 250 of his employees have taken a core curriculum that includes math, geometry, blueprint reading and statistical process. Of those, 163 have taken a "mini-M.B.A." program for two more years on their own time. It is the equivalent of the first two years of college, at company expense.

Teaching Teamwork

Part of what is taught is how to work together as a team, with rotating responsibility for safety, costing, production control, materials and personnel. Mr. Featherstone insists that this teamwork, an outgrowth of education, has made his company more competitive. He says he can beat other countries in efficiency and costs and has been able to take work back from Mexico and Japan. Last January, for example, the company captured a contract to manufacture sorters for printing equipment from a Mexican business, even though he pays his workers $11 per hour and the Mexican company pays $2.

Margo Brown of Motorola says that as a result of her company's education program, production per employee doubled over the last six years, while the work force went up by slightly less than 9 percent. In the same period, the number of defects fell from 6,000 per million units produced to 30, and the company is shooting for 3.4 defects per million. The improvement saved the company $3.9 billion in five years.

Motorola had wanted to teach workers new production methods in the mid-80's, but found they were unable to grasp them. "We were disappointed; they weren't getting it," Ms. Brown said. The company gave employees a reading test, and many failed. Those who did were trained in basic reading skills. Motorola officials work with school systems to teach teachers what industry needs.

To do their part in that direction, Motorola offered students communications workshops. Since the workers come from 40 different countries, the company also offered English as a Second Language classes. Ms. Brown credits the education program for the productivity increase.

There are other benefits. Mr. Featherstone's Will-Burt Company has found that a better-educated work force leads to reduced medical costs. He also credits improved education with cutting his workers' compensation bill from over $100,000 in 1985 to $662 last year.

Another solution for companies dissatisfied with the products of public schools is to start their own for the children of their employees. That's what is happening at Minco Technology Labs Inc., a resaler of value-added semiconductors in Austin, Tex. The company's president, Liz Coker, who had not gone beyond the ninth grade herself, launched her school for the children of employees last fall, with 13 children in classes from preschool through fourth grade. After three years the school is eligible to become accredited, which means the students will be tested to see if they have learned enough to transfer into other schools.

Ultimately, Minco is aiming for a school with grades K through 12. "We have to take the responsibility of educating our children ourselves," Ms. Coker said. ■

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