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Digest of
Applied Technology Education
Programs

State officials need to be more aggressive in monitoring the effectiveness and efficiency of applied technology programs than they have been in the past. Some programs have a very low number of graduates placed in employment related to their field of study. However, most graduates of applied technology programs do find related employment. Uniform cost and placement procedures need to be adopted so that individual programs can be regularly monitored.

This audit responds to questions raised by several legislators concerning the efficiency and effectiveness of the applied technology programs taught at the colleges and applied technology centers (ATCs), the governance of the system, and the fairness of the current approach for funding applied technology education. Specifically, legislators want to know whether graduating students are effectively placed in related employment and if program costs are reasonable. In addition, questions relating to the governance of applied technology were raised out of concern by legislators over the apparently overlapping roles of the college and ATC programs.

Questions regarding the fairness of the state's funding for applied technology education were answered in a letter report released on December 14, 1994. The issue of funding equity was raised out of concern that some regions might be receiving more than their fair share of the state funds for applied technology education.

The specific findings of this report include:

An Independent Process of Monitoring Job Placement is Needed. An independent process is needed to identify the student placement rates for each applied technology education program offered in the state. This information would not only provide policymakers with the information they need to evaluate the performance of individual programs; but it would also provide students with the information they need to make informed career decisions. We identified the employment status of over 900 former applied technology students from 34 different programs. Overall, 61 percent of the students were employed in a related job at least eighteen months after the school year had ended. However, a number of programs had a low percentage of graduates finding related employment while other programs experienced a high percentage of the graduates finding

related placement.

Program Costs Should be Monitored.   The management of program costs is important oversight function and must be performed in order to assure that funds are being used efficiently. For this reason, we recommend that the Board of Regents and the State Board for Applied Technology Education require their institutions to adopt a uniform set of procedures to generate program cost information. The current financial and management information systems are inadequate for monitoring costs at the program level. This required us to develop our own method for comparing the costs of programs offered at the state's ATCs and colleges. Although the costs vary from institution to institution, we found that when similar programs were compared, it generally cost more to provide applied technology training at the colleges than at the ATCs. This is mainly due to the higher cost of salaries per hour of instruction at the colleges. The college instructors are either paid more or spend less time teaching (or both) than instructors at ATCs. On the other hand, our analysis does not consider the curriculum, the quality of the instruction, and other differences that may exist between the ATC and college programs. These differences may be partly responsible for the higher costs of the college programs.

Governance of Applied Technology Education Needs to be Strengthened. Some type of governing authority needs to be empowered with the ability to implement the administrative reforms described in this report and in a letter report issued previously. The education community has been asked for years to develop a better system for monitoring student placements and program costs, and for funding applied technology education. The reason these reforms have not been put in place is that both the Board for Applied Technology Education and the Board of Regents have not been aggressive enough in holding the institutions accountable for placing students in the job market, for establishing uniform cost accounting methods and for assuring that program costs are reasonable. To make sure that institutions are held fully accountable, we recommend that the Legislature strengthen the approach for governing applied technology education in the state. This report suggests a number of steps legislators might take to strengthen the governance of applied technology education.

Chapter I
Introduction

State officials need to be more aggressive in monitoring the effectiveness and efficiency of the state's applied technology programs.   To monitor program effectiveness, we recommend that the Legislature adopt an independent process for monitoring student placements. In addition, program efficiency should be monitored by requiring institutions to regularly report the costs of individual applied technology education programs. These administrative controls should enable the Legislature and other state and local officials to make sure that applied technology programs are aimed at the jobs needed most by Utah employers, that students are in fact getting jobs after they graduate and that the state is spending no more than it has to in order to provide the training.

These administrative reforms are important for two reasons: (1) it will allow the state to hold institutions accountable for their use of funds for applied technology education and (2) they will provide state officials with the information they need to think and act strategically about how to meet the technology training needs of the state's work force. Just as any private business cannot survive without continually monitoring its costs and the needs of its customers, so too must those responsible for applied technology education receive constant feedback regarding how effective their programs are at placing students in the job market and at what cost. In addition, just as any prudent business person would evaluate the potential risk and returns before making a large investment in capital facilities, legislators need to be provided with the information they need to make a wise investment in new training facilities and equipment. This process of continually evaluating program effectiveness and costs is what we refer to as the strategic management of applied technology education.

Although the colleges and ATCs claim to be highly responsive to the needs of employers and that their programs are cost effective as well, neither they nor their boards receive the kind of information required to manage their programs strategically. This is because the state currently has a fragmented system for governing applied technology education.   Applied technology education is provided by ATCs and community colleges which are governed separately by the Board of Education[1] and the Board of Regents. In addition, the ATCs and the colleges tend to operate independently of the administrative oversight of the staff at the State Board for Applied Technology Education and the Board of Regents. Finally, the state's forty school districts and a number of agencies that sponsor the state's many job training programs also play an important role in the state's technology training efforts.

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[1]The State Board of Education also functions as the State Board for Applied Technology Education.

The Legislature has had many concerns about the effectiveness and the efficiency of applied technology education in the state, largely because they have not received the information they need from the institutions themselves. For this reason, the Legislative Auditor General was asked to provide the Legislature with: (1) specific information regarding the placement rates of former students, (2) to identify the costs of applied technology education at the colleges and ATCs, (3) to evaluate the governance of applied technology education, and (4) to describe how funds for applied technology education are allocated in the state. This information is provided in Chapters II, III and IV of this report and in a letter report released previously. In our opinion, cost and placement data are essential measures of program efficiency and effectiveness that should be made available to the Legislature each year. In fact, this report identifies instances in which the Legislature has been asked to appropriate over seven million dollars for the expansion of applied technology programs without independent information regarding the performance or costs of the program.

The governance of applied technology education is a fourth item we were asked to consider. We have concluded that until the Legislature provides applied technology education with a more effective form of governance, the legislature will continue to have difficulty obtaining reliable information regarding the effectiveness and efficiency of applied technology programs in the state. We recommend that the Legislature address the issue of governance of applied technology education by considering the steps described in Chapter IV of this report. Once an improved system of governance is in place, the Legislature should provide that governing authority with a clear mandate to clarify the statewide goals and policies for applied technology education and to develop administrative controls necessary to hold the education system accountable for accomplishing those goals.

Many Previous Reports Recommended
Improved Administrative Controls

This report should be considered in context of the many previous reports that have addressed the need for better administrative controls for applied technology education. The Legislative Auditor General, Legislative Fiscal Analyst and a number of other groups have previously reported the need for better management of the state's applied technology training programs. Among other recommendations, these reports have called on the providers of applied technology education to: (1) determine the success they have in placing students in the job market, (2) develop a consistent approach for student enrollment accounting, (3) monitor program costs, and (4) improve the process of budgeting and funding for applied technology education. However, after years of talking about the need for improved administrative controls the state has still had little success actually implementing them.

Administrative controls are the mechanisms by which those who govern can monitor the

effectiveness of those who are assigned the task of carrying out the state's goals and objectives. For example, if the objective of applied technology training is to help people obtain the skills they need to for employment, monitoring job placement rates would be an useful administrative tool to determine program effectiveness. It would be the responsibility of the governing authority to make sure standards and procedures are developed for tracking student placements. Furthermore, if student enrollment information is used to make important management decisions such as funding levels, teacher workloads, and capital investments, the governing authority would have to ensure that uniform accounting and reporting procedures are used so that enrollments are reported in a reliable and consistent manner. These and other administrative controls are important because they help those who govern the system make sure their policy objectives are accomplished, that programs are effective and that tax funds are being used efficiently.

We found several reports dating back as early as 1979 that called for improved administration of applied technology education in the state. Some of the earliest reports begin by referring to *"persistently serious problems with the question of governance of vocational education"* and that *"for many years, officials in Utah have wrestled with the question…"* This suggests that the debate over the governance and administration of applied technology education has been a problem for many years. The reports we are aware of include:

1. A 1979 report by the Governor's Committee on Executive Reorganization titled: ***Final Recommendations for Consolidating Employment, Training and Rehabilitation Programs.***

2. A 1982 report by the National Center for Research in Vocational Education titled: ***An Assessment of the Governance and Administration of Vocational-Technical Education in Utah***

3. A 1982 report by the Office of Legislative Auditor General titled: ***A Performance Audit of Area Vocational Centers in Utah.***

4. A 1986 report of the Office of the Legislative Fiscal Analyst titled: ***Vocational Education Cost Comparison Higher Education/Area Vocational Centers.***

5. A 1987 report by the Office of the Legislative Fiscal Analyst titled: **Cost and Cost Effectiveness of the Area Vocational Centers from FY 1983 Thru FY 1987.**

6. A 1988 report by the Office of the Legislative Fiscal Analyst titled: **Appropriation Process for Vocational Education.**

7. 1982, 1987 and 1991 reports by the State Council on Applied Technology Education titled: ***Biennial Evaluation Report.***

8. A 1990 Report by Consultant Roger J. Vaughan titled: ***Preparing Tomorrow's Workforce: A Technical Training Strategy For Utah.***

9. A 1991 Performance Audit by the State Office of Education titled: ***A Performance Audit of the State Applied Technology Centers.***

10. A 1992 Audit Report by the Office of Legislative Auditor General titled: ***Coordination of Utah's Employment and Training Programs.***

These reports show that there has been a great deal of interest in how to improve the state's applied technology training programs. Most of the reports make the same recommendations including the need to track placements, improve accountability of finances and student enrollment, improve funding, and other issues relating to the oversight and governance of the system. These reports have led us to conclude that the state has received plenty of advice as to how the applied technology training system might be improved, but lacks a mechanism for actually implementing these recommendations. The specific recommendations made by these reports are summarized below.

Institutions Have Been Asked to Track Student Placement Rates

Monitoring placement rates can be an important administrative tool because it helps state policymakers hold the education system accountable for providing the training programs needed most by employers. If a program has low placement rates, it may suggest that there are not sufficient jobs to justify a program, that the training does not adequately prepare students for the jobs they seek, or that the wages offered in the industry are not adequate to retain past graduates. Although the institutions that provide applied technology education have been asked to track program placements for years, our findings, summarized in Chapter II, show that the institutions which provide applied technology training either do not track placements, or the placement data they obtain is not complete.

ATCs Lack a Uniform Process for Tracking Placements. We found six major studies between 1982 and 1991 which recommended that the ATCs become more market driven by tracking student placements. Four of those reports recommended that the State Board for Applied Technology Education adopt official definitions for a student placement and develop procedures to assure placements were tracked in a consistent manner.

A 1982 Legislative Audit said: *"No placement standards have been established by the State Board. Placement standards and reliable placement data would allow determination of how effective a center is in training people for jobs."* Auditors found that: *"Placement information … is either nonexistent or unreliable."* After reviewing the placement information that had been reported, auditors said: *"at every center our work indicated there were fewer placements*

than claimed. This discrepancy was due to the different definitions or methodologies used by the centers to develop placement data."

A 1988 report by the Office of the Legislative Fiscal Analyst found that *"the effectiveness of the AVCs[2] was difficult to judge due to the lack of job placement data."* The fiscal analyst then recommended that: *"an official definition of a job placement and an official procedure for counting job placements needs to be set. This is so that placement data collected in the future at each of the AVCs will be comparable. Reliable placement data in the future is a must if the effectiveness of the AVCs is to be determined."*

A 1991 internal audit by the State Board for Applied Technology Education also found that placement statistics were not reliable because institutions were using different methods to count placements. The report recommended that: "*the State Board for Vocational Education should take an aggressive role and better define how to account for and report placement data …"* During our audit, we found that the ATCs still do not have adequate standards and procedures for tracking student placements.

Colleges Also Lack a Uniform Process for Tracking Placements. Several of the past studies of applied technology education have recommended that the colleges also track student placements. However, the system of higher education still does not have a uniform system for monitoring student's after they graduate. Most colleges attempt to conduct surveys through the mail or over the phone. This approach provides poor results and tends to be very costly. For example, the Salt Lake Community College has made an effort to track student placements through written surveys. Yet they manage to obtain results on only about half of the graduates each year.

We Recommend That Institutions Track Placements. In Chapter II of this report we summarize the results of our in-depth follow-up study of the employment status of more than 900 applied technology students who graduated during the 1991 school year. Overall we found that about 61% of the students had a related job at least eighteen months after the school year had ended. However, we found some individual programs with relatively low placement rates and others with relatively high placement rates. We recommend that each institution providing applied technology education should report student follow-up information similar to that described in our report to the governing authority for applied technology education each year.

We also found that the ATCs and colleges still do not use consistent procedures for tracking student placements. This is because the Board of Applied Technology Education and the Board of Regents have not developed placement standards and definitions. In addition, we found many errors in the placement reports generated by the institutions that do track student placements. We are therefore repeating the recommendations made in previous reports that a state governing authorities develop a clear definition of a student placement. In addition, we are proposing that an independent entity such as the Department of Employment Security be

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[2]Applied technology centers were formerly referred to as Area Vocational Centers (AVCs).

responsible for identifying student placement rates.

Previous Reports Have Recommended Better
   ## Cost and Enrollment Information

Our report also reiterates the recommendations of several previous reports that have asked ATCs and colleges to provide accurate and consistent financial and student enrollment information. It is essential that this information be because it is used by the State Legislature, the Governor's Office of Planning and Budget, the Board of Regents and State Board for Applied Technology Education to monitor the efficient use of public funds and to otherwise manage the affairs of the state's applied technology programs. For example, in the past, this information has been used when making decisions regarding appropriations, tuition rates, the funding for capital facilities, teacher workloads, and when approving new programs and considering the elimination of existing programs. If this information is not reported accurately, it can effect the ability of state officials to administer these programs effectively.

ATCs Have Been Repeatedly Asked to Improve Financial and Enrollment Data.
Several reports recommended that the State Office of Education improve the reliability of its cost and student enrollment data. Specific problems with both the cost information or the measures of student activity were found:

The 1982 Audit of ATCs by the Legislative Auditor General found that because: *enrollment and cost data [are] inadequate…Program inefficiencies have gone unnoticed and the effectiveness of secondary programs has not been determined.*

Specifically, auditors found the measures of student activity were inaccurate: *We found each center had calculated FTE enrollment differently. Full-time equivalent (FTE) enrollments for all centers but Davis have been overstated.*

A 1987 report by the Legislative Fiscal Analyst found that *"it is very difficult to conclude what center or centers are too expensive or what center is operating most effectively or efficiently when there are no standards by which to judge."* The Fiscal Analyst recommended that the State Office of Education improve oversight of the ATCs by establishing standards for *"Cost per Membership Hour, Enrollment and Job Placements."*

A 1991 internal audit by the State Office of Education indicated that the problems identified in the 1982 legislative audit and the 1987 fiscal analyst report still had not been addressed nine years later:

Because few central state board policies have been defined, inconsistencies have developed among ATCs regarding: 1) how some adult membership hours are counted, documented, and reported, 2) how placement statistics are counted, documented, and reported, and 3) how financial data is reported. As a result of these inconsistencies,

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the credibility of statistical and financial data coming from the ATCs is low. In fact, various key people outside the ATC system perceive data coming from the ATCs to be distorted and inconsistent. Without consistent, reliable data there is little opportunity to compare one ATC to another or identify best use of state and federal dollars. Also, reliable data must be maintained and fairly disclosed in reports as a critical element of internal control. ATCs must become even more accountable to the State Board for Vocational Education and to the public. This requires specific state board policies so that statistical and financial data can be counted, documented, and consistently reported.

As a result of this internal audit, the State Board for Applied Technology Education developed a new set of policies and procedures for the applied technology centers. However, as we report in Chapter III of this report, we found that many of these new policies have not been adopted by the ATCs. They continue to have problems consistently reporting their student enrollment information and placement data. However, we did find determine that the ATCs are now using a consistent approach for reporting financial information.

We Also Recommend That Institutions Develop a Standard Process for Managing and Reporting the Costs of Their Programs. In Chapter III we compare the costs of similar programs offered at both the applied technology centers and at the colleges. Although we did not identify any previous reports that called on the colleges to develop better accounting procedures, we recommend that all institutions that provide applied technology training should be required to generate program cost information each year. As in the previous reports, we recognize these are important administrative tools that are needed to make sure funds for applied technology education are being used efficiently. However, to create a reliable process for managing program costs, the governing authority for applied technology education will have to develop standard accounting procedures to improve the reporting and management of the cost of applied technology education.

There is a Need to Improve the Budget and Appropriations Process

The budget process can serve as another important control. The potential to withhold funding for applied technology education if the state's goals and policies are not being met, can give the governing authority a tremendous amount of leverage with the institutions that provide applied technology training. On the positive side, funding can also be used as an incentive if appropriations are based on positive performance outcomes.

Past reports indicate that the state's process for funding applied technology education is not uniform and fails to reward institutions for successfully accomplishing their objectives. For example, a 1988 report by the Legislative Fiscal Analyst reviewed the problem of funding applied technology education through different funding mechanisms and separate appropriation

committees. The solution which was proposed was *"that the Higher Education Appropriation Committee and the Public Education Committee form a joint sub-committee to review and make all appropriations for vocational/technical education for higher education and for the Area Vocational Centers."* The report also pointed out the need for a *"uniform allocation of state resources between the two vocational education programs."*

Past reports also call on the state to reward institutions for successfully placing students in the job market and for other positive performance outcomes. For example, a study conducted in 1990 by consultant Roger J. Vaughan recommended that funds be distributed based on performance outcomes:

> *The most effective incentives the state can offer institutions are those embedded in funding mechanisms. Yet, in Utah, as in most states, post-secondary programs are funded on enrollments, not on how well participants learn or their later career achievements… Instead of allocating all state aid in this way, a portion of state funds should be distributed according to how well students do--perhaps measured through completion rates or placement rates (with some consideration given to the quality of the job in which the student is placed).*

Similar suggestions were recently made by the Task Force for Education Strategic Planning. They recommended a more uniform budget process and a funding system based on performance measures. Specifically, they identified the *"need for emphasis on applied technology education is so critical in Utah that appropriations should come through a coordinated appropriations process."* They recommended that *"all applied technology education and job training needs will be jointly heard by the Public Education, Higher Education, and Community and Economic Development Appropriations Subcommittees … in order to adequately increase the funding for applied technology education."* In addition, they recommended that: *"USOE and USHE and the Legislature develop a funding process that rewards output measures…"*

In a separate letter report issued on December 14, 1994, we reported on the need for a more uniform process for appropriating funds for applied technology education. We support the concept of a unified legislative review of funding for applied technology education. In addition, however, we believe it is just as important that the institutions provide legislators a unified request for funds in the form of a single funding mechanism and a single statewide budget for applied technology education. We also recommend that funding be based in part on performance outcomes.

As with the other administrative controls, we believe that the primary obstacle to addressing this important budget and funding problem is the absence of a strong governing authority for applied technology education. One of the responsibilities of the governing authorities should be to oversee the use of funds for applied technology education and to prepare and present a single budget request to the Legislature.

The Governance Issue Needs to be Addressed

In addition to identifying a need for improved administrative controls, several past reports have identified the need to improve the state's approach for governing applied technology education and related programs. In our opinion, it is important that the Legislature address the governance issue because a strong governing authority is needed to establish the state's policies and goals for applied technology education and to establish the administrative controls needed to ensure those goals and policies are achieved. One reason the state has had difficulty responding to past recommendations for improved administrative controls, is that there has not been a strong system of governance to make sure these controls are put in place.

Past Reports Call on the State to Resolve the Governance Issue. Perhaps the most comprehensive study of governance in Utah was a 1982 study conducted by the National Center for Research in Vocational Education, based at Ohio State University. They found that: *"Utah is experiencing conflict between agency boards (Board of Education and the Regents for Higher Education) over who will control vocational-technical education."* The center added that: *"The conflict and debate has not subsided and will not until the question of governance is fully solved."* This group suggests that the state first clarify the goals and objectives of the state's applied technology education system and then create a new system of governance based on the criteria of an effective system of governance. Their specific recommendation will be discussed later in Chapter IV of this report.

Several reports issued by the Utah State Advisory Council for Vocational and Technical Education suggest that the state improve the system of governing applied technology education. For example, in 1982 this group suggested: *"we need a strong governing board for vocational education to provide a strong advocacy voice for vocational education. Further, post-secondary vocational education is not really controlled by the State Board for Vocational Education."* The advisory council suggests that a strong governing authority is needed to *"assure that there is a close relationship between the output of the education system and the needs of employers and students."*

In 1987, the Legislative Fiscal Analyst noted the ongoing debate over the issue of governance. They cited the 1982 study by the National Center for Research in Vocational Education and reminded readers that although the Fiscal Analyst's study was limited to program costs, the resolution of the governance issue impacted the efficiency of programs, stating that: *"it is important to remember that the way Vocational Education and the Area Vocational Centers are governed will directly affect how cost effective they can or will be."*

Governor Leavitt also pointed out the need to improve the oversight of the state technology training programs. In his first State of the State address, Governor Leavitt said: *"Our goal is to prepare our citizens for high paying jobs and to build our economy through the creation of*

an excellent work force." Among the steps to accomplish this, the Governor called on state officials to *"change the organization and structure"* of the state's technology training efforts and *"look for new ways to elevate and **oversee** the important area of job and applied technology training…"* The Governor then called on the Task Force for Education Strategic Planning to address, among other things, the governance and administration of applied technology education.

After several months of study, the Task Force for Education Strategic Planning recently recommended that the Joint Liaison Committee of the Board of Regents and Board of Education perform the governance functions for the state's applied technology programs. House Bill 46, introduced during the 1995 General Legislative Session, will create an applied technology advisory committee to advise the Joint Liaison Committee on a wide range of policy issues facing the state's applied technology education system.

We Recommend That the Legislature Address the Governance Issue. In our opinion, the reason the state has not been able to adopt the administrative controls so frequently recommended is that there is not an adequate system of governance for applied technology education. Whether or not the Legislature addresses the governance issue, the state still needs to adopt better administrative controls. However, the state will be more likely to adopt effective administrative controls if the system is also provided with an improved system of governance.

We recommend that the Legislature address the governance issue by following the steps we describe in Chapter IV of this report. These are largely based on the steps recommended in the 1982 report by the National Center for Research in Vocational Education. Specifically, we recommend that the Legislature take the following three steps: (1) clarify the roles and responsibilities of those who provide applied technology education, (2) clearly define the responsibilities of a governing body, and (3) select from among the proposed systems of governance. We do not advocate that the Legislature adopt any specific governance structure, only that some governing authority be empowered to oversee the implementation of the administrative controls described in this report.

Audit Scope and Objectives

This audit responds to questions raised by several legislators concerning the efficiency and effectiveness of the applied technology programs taught at the colleges and ATCs, the governance of the system, and the fairness of the current approach for funding applied technology education. Specifically, the legislators want to know whether ATCs or colleges provide the most cost efficient services and which are the most effective in terms of student placements. The requestors felt that they needed better information regarding the cost of

individual programs in order to *"identify what we are getting for our money."*

The issues relating to the governance of applied technology education were initiated out of concern by legislators over the apparently overlapping roles of the college and ATC programs. Specifically, we were asked to determine whether the ATCs were filling the role intended for them by the Legislature.

Questions regarding the distribution of state funding for applied technology education were addressed in a letter report released previously on December 14, 1994. The issue of funding equity was raised out of concern that some regions were not receiving their share of the state funds for applied technology education. In response to the recommendations in that letter report, the legislative interim committee for education asked the Joint Liaison Committee, with the advise of the Advisor Committee for Applied Technology Education, to recommend a new funding strategy for applied technology education. This new funding strategy is to be presented to the Education Committee before the end of the 1995 General Session.

The scope of this audit was limited to the most common applied technology programs aimed at the general population. The ATCs and the colleges also provide special applied technology programs designed to meet the unique needs of certain industries, corporations, or disadvantaged populations. Because they are generally self supporting or are highly unique, these specialized programs (such as Custom Fit, private custom training, Short Term Intensive Training, and continuing education) were not included in the scope of this audit.

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Chapter II
An Independent Process of
Monitoring Program Placements is Needed

An independent process which generates placement data for all applied technology education would provide valuable information to the governing bodies, school officials and students alike. This audit determined that most of the students (61%) who graduated from applied technology programs during 1991 had related employment at least eighteen months after the end of the school year. However, placement data for the individual technology programs showed mixed results. A number of the technology programs had a low percentage of graduates finding related employment while other programs experienced a high percentage of the graduates finding related placement.

Currently, placement data does not exist for some institutions and is unreliable at others. Accurate placement data can provide governing authorities and administrators with the management information they need to monitor the success of existing programs. Sometimes legislators are asked to approve large appropriations to expand existing programs or create new ones without the benefit of clear performance measures. Other times poorer performing programs are not recognized or examined. In addition, it appears that some programs are taught at so many institutions that the total number of graduates exceed the number of new positions available in the job market. Consequently, students have enrolled in some programs and spent years to graduate without knowing that a majority of the graduates from previous years were unable to find related employment. Finally, graduates of some programs have complained that they were not aware until after they graduated that most employment opportunities in their field of study requires them to relocate.

This chapter reviews placement experience because it was part of the overall audit request. The requesting party asked that we determine the placement success exhibited by applied technology education graduates. To do this we selected applied technology programs from institutions in regions throughout the state to determine which graduates found related employment and which did not. This study identifies the placement rates for selected programs for students graduating during the 1991 school year. It should be understood that a one-year study does not cover a sufficient period of time to indicate the long-term success or failure of any program. In the future, the placement success of applied technology programs should be analyzed over several years in order to account for the changes in the employment cycle that are associated with some trades. Once a history of placement rates has been established, state officials should then have reliable information regarding the relative success of each program. Reliable information on the salaries of graduates was not available.

However, in the future, wage information should serve as another important management tool when evaluating the employment status of graduates.

Most Graduates Found Related Employment

We determined that 61 percent (or 578 out of 949) of the graduates from the 1991 school year were still employed in a related job by the first quarter of the 1993. We found that the institutions along the Wasatch Front generally had higher placement rates than institutions in the rural areas of the state. However, all institutions had at least some programs which had relatively high placement rates. In addition, each institution also had at least some programs with relatively low placement rates.

Our study was limited to the graduates from 34 technology programs taught at four ATC's and three colleges. Student were considered to have "related" employment if they were employed in an occupation that required the use of the technical skills they had obtained at an ATC or community college. Our analysis is based on the student's employment status at least 18 months after the end of the school year in which they graduated. This was necessary to give students enough time to find a related job. In addition, it was decided that students should not be considered successfully placed if they only held their related jobs for a few months after completing their training.

Some applied technology students were excluded from our followup study. For example, because some students already had a related job before they enrolled, it was decided that the institutions should not be given credit for placing these students. In addition, we did not monitor the employment status of students who continued their education at a college or university after graduation. Finally, students who dropped out without completing their training were not included in the study. In our view, the number of students who leave before completing their program is a significant problem at some institutions but is a matter that we could not fully address. Our brief followup of the students at two ATCs who left their programs early shows that very few of them are finding related employment.

Our study of student placements is primarily based on the information reported by Utah employers to the state's unemployment insurance program. About 90% of the state's employers are required to have unemployment insurance coverage for their employees and every quarter they must report the social security number, name, and quarterly wage of each employee. To identify the employment status of students not listed on the state's unemployment insurance records required that we also access the databases maintained by several different state agencies. Finally, several hundred phone calls were made to students and their employers to verify the student's employment status.

**Graduates of Some Institutions Have
  More Trouble Finding Related Jobs**

In response to the legislative request to determine the placement rate of the various institutions we summarized our data by institution. Because of the complexity and size of this audit we had to limit our review to graduates from four ATC's (Bridgerland, Davis, Sevier Valley and Uintah Basin) and three colleges (Dixie, Salt Lake Community, and Utah Valley State). Our placement data for graduates from 34 technology programs indicate that the institutions along the Wasatch Front generally have a higher placement rate than those in the rural parts of the state. The following figure shows the placement rate for the seven institutions.

Figure I			
Current Employment Status of 1991 Graduates by Institution			
Institution	**Total Graduates**	**Number Employed in Related Field**	**Percent Employed in Related Field**
ATCs			
Bridgerland	80	34	43%
Davis	71	51	72%
Sevier Valley	44	33	75%
Uintah Basin	67	23	34%
COLLEGES			
Dixie	76	16	21%
Salt Lake Community	368	263	71%
Utah Valley State	243	158	65%

As can be seen from Figure I, the graduates of most applied technology programs offered at the Salt Lake Community College (SLCC), Utah Valley State College (UVSC), Davis Applied Technology Center (DATC) and Sevier Applied Technology Center (SVATC) have had success finding employment in their field of training. Fewer graduates found related employment at Bridgerland Applied Technology Center (BATC) and Uintah Basin Applied Technology Center (UBATC). Dixie College graduates had the least amount of success finding related employment.

The main factors contributing to placement success are the type of programs offered, the market demand and the location of the institution. The type of programs offered and market demand will be discussed later in this chapter. The lack of related employment in some rural areas and the reluctance of some students to relocated makes it difficult for the institutions in those areas to find related employment for their students. We found that related employment opportunities tend to be more plentiful in the urban areas (Wasatch Front) as opposed to the rural regions of the state. Our results show that graduates from rural regions tend to have a strong preference for local employment. Most will look for related employment locally and if they are unsuccessful will take non-related employment so they can stay in the region.

Our discussions with graduates at both Dixie College and BATC indicates that many take unrelated employment in the region. These jobs usually require no formal training and often attract graduates with higher starting wages.   For example, one Dixie college graduate, after trying to find a related job, ended up taking a job in the local retail industry which paid a higher starting wage than is usually offered to students from the applied technology program from which she graduated. A BATC graduate working for a manufacturing plant, told us that he was more interested in finding a job locally than finding one that was related to his training. As a result of ties graduates have to the local region, rural institution's placement rates may tend to be lower. Officials may need to take this fact into consideration when evaluating programs.

Although most applied technology programs were included in our follow-up study, there were some programs which we had to exclude because it was too difficult to determine whether the employment is related to the training they received. These are the technical skills which can be applied to almost any job. For example, the training received in office occupations, accounting or computers could be effectively used in almost any industry or job. Figure II provides a complete summary of the placement rates for the 34 program included in our study.

As can be seen from the Figure II, most institutions have some programs with high placement rates and some programs with relatively low placement rates. In 1991, programs such as nursing and electronics show high placement rates at most institutions. Programs such as aviation maintenance and welding had low placement rates at most of the institutions where they were offered. The reason certain programs may show higher placement rates than others may be partly due to the market demand for graduates during the year of our study. In addition, in some programs, such as welding, the state may have overwhelmed the job market by graduating too many students. For other programs, such as nursing, the state may not have met the local demand for new employees. This suggests that institutions need to be more aware of the market demand for their programs. We will address individual programs and market demand in the next two sections of this chapter.

Programs Show Mixed Results

Based on the employment status of past graduates, we have identified some technology programs that have high placement rates for the year tested. We have also identified other programs that have low placement rates for the same period of time. Because the employment cycles of many of the applied technology employers have large shifts, we caution the reader not to make hasty conclusions based on information gathered from a single year. This type of data, if collected year after year, can provide good management information that will enable officials to know which programs are most effective. In the future, the performance of a program (as reported in this chapter) could be coupled with the cost of the same program (as reported in the next chapter) to provide a more complete indication of cost-effective programs.

From the limited data collected in this review it is difficult to determine what an acceptable placement rate should be for any individual technology program. However, some programs had such high placement rates that they were clearly superior in placement of graduates. The placement rates of some other programs was so low that they clearly require further monitoring to determine if they need to be reduced or eliminated. We believe policymakers should establish standard performance levels and review this kind of information on an annual basis.

Programs With High Placement Rates

Programs that we are least concerned about are the ones in which graduates show high placement rates. Figure III shows examples of programs with high placement rates.

Figure III
Programs with High Placement Rates

Institution	Program	Percent Related Employment
DATC, SVATC, SLCC, UBATC & UVSC	Nursing (ADN & LPN)	96%
SLCC	Medical Assistant	86%
SLCC	Criminal Justice	71%
DATC & UVSC	Machine Shop	69%
BATC, DATC, SVATC, SLCC, & UVSC	Electronics	68%

As can be seen in the above figure, most graduates found related employment. Graduates of the combined nursing programs appear to have the highest placement rate at 96 percent. The nursing program graduated a total of 223 students in 1991, of which 214 were successfully placed.

In our opinion, the reason these graduates found related employment is because of the high market demand for these types of skilled people. When institutions have trained students in areas that are in demand by Utah's employers, graduates have had better success in finding related employment. According to Utah's labor market projections, each one of the programs that did well were in high demand by Utah employers. In fact, projections at the time these students were in school indicated that the nursing field could have employed 20 percent more nurses than institutions graduated. We believe institution's should consider Utah's labor market projections more closely when determining the training needs of Utah employers.

Some Programs Have Low Placement Results

The programs that we are most concerned about are those whose graduates appear to have had difficulty finding related employment. Figure IV shows examples of some programs where very few graduates found related placement.

Figure IV
Programs with Low Placement Rates

Institution	Program	Percent Related Employment
DIXIE & SLCC	Aviation Maintenance	14%
BATC, DATC, SVATC, SLCC & UBATC	Welding	28%
UBATC	Emerg Medical Tech	28%
DIXIE, SLCC, UBATC & UVSC	Child Development	34%
UVSC	Legal Assistant	37%

Figure IV shows examples of certain programs at institutions that have low placement rates. Some programs found to have low placement rates were not listed in the Figure IV due to the low number of graduates. Again, this is only a one-year evaluation and until more information can be obtained, it is difficult to determine whether these are viable programs or not. The following text illustrates some possible reasons why these programs have low placement rates.

As mentioned earlier, some graduates from rural schools would rather take non-related employment in their local communities rather than relocate to find related employment. For example, a graduate from Bridgerland's meat-cutting program told us that he knew of jobs that were available outside the local geographical area. However, he was already established in a non-related job locally and decided to continue his employment there rather than seek a meat-cutting job out of the region. We found this to be typical of many students in rural areas. If they can not find employment related to their training, they will often take local employment in the service, manufacturing, or retail industries, which generally require no applied technology training but allows them to remain in the area.

Graduates of some programs choose not to enter related employment after they decide that the wages are too low. According to several graduates of the child development program, most related jobs pay slightly over minimum wage. As a result, many graduates from that program are seeking other employment opportunities in fields that are not related to their training but pay higher wages. One child development graduate told us that she could not afford to take a minimum wage job related to her training when other non-related jobs are available that pay more. This individual is now working for a tele-marketing company in an unrelated position that requires no formal training and is making considerably more than she would in related job.

Some graduates we contacted told us that jobs could not be found in their particular field.

According to a number of aviation maintenance graduates, very few if any jobs were available for aircraft mechanics here in Utah. One graduate had only heard of one or two possible job openings within a year after graduation. This individual decided he had no choice but to accept an unrelated job so he could support his family. The few graduates who did find related employment ended up leaving the state.

Some graduates we talked to left related employment shortly after being employed because of the poor working conditions. For example, one welding graduate said the physical conditions were too extreme and he found that he did not have the strength required to continually lift heavy objects. In addition, he told us that working conditions can be very hazardous and that he had been hurt physically on the job. Because of this, this individual ended up returning back to school in an unrelated program.

We believe that monitoring program placement in relation to demand will help institutions to understand why certain graduates are not finding related employment. As a result, institutions will have better information available to make decisions concerning the direction that should be given to certain programs. In addition, students can use the information to choose which programs they wish to enter. The following section identifies the need to monitor programs based on market demand.

Programs Need to be Market Driven

To make the state's applied technology education system more responsive to the needs of employers and students, institutions need to consider more closely the relationship of supply to demand. When institutions train more students than the market demands, the result is some individuals are unable to find related employment. The key is to establish a sufficient number of trained individuals to meet the needs of Utah's employers. It appears that the institutions are graduating students with insufficient consideration to labor market projections. In our opinion, monitoring statewide labor market projections could help in improving the match between the number of students trained and the number of jobs available.

Institutions Should Monitor
Labor Market Projections

According to the 1990-91 Utah labor market report, institutions may have overwhelmed the job market with graduates in certain occupations while not meeting the demand for graduates in other fields. Figure V shows the total number of graduates in selected programs versus the projected number of job openings.

Figure V Total Graduates Compared to Total Projected Openings			
Program	Total Graduates	Projected Jobs	Graduates ÷ Jobs
Assoc Degree Nursing	187	233	80%
Electronics	198	190	104%
Diesel Mechanics	94	70	134%
Welding	217	100	217%
Aviation Maintenance	48	20	240%

As can be seen from the Figure V, in the case of welding, institutions graduated more than double the number of job openings projected by the Department of Employment Security for that year. This may explain why most welding graduates had difficulty finding related placement. In the previous section, we indicated that only 28 percent of all welders found related employment. On the other hand, Figure V shows the state graduated only 80 percent of the total demand for nurses, leaving a shortage in the supply of nurses for that year. Nursing showed a very high placement rate of 96 percent.

Currently, no oversight mechanism exists to monitor the total number of graduates from all the state's institutions and compare that number to the labor market projections. While each institution is aware of the number of graduates they have for their own programs, no single governing authority has the responsibility to evaluate the total number students to be graduated statewide. For the most part, the Board of Regents and the Board of Education receives labor market projections only when a new program is being considered. In our view, labor market information and program placement data should be considered on an annual basis for all ongoing state-funded applied technology programs. It is important that this data be considered for all programs at ATCs and colleges together because graduates from all institutions compete for many of the same positions available in the state's job market.

If institutions are going to assure graduates the opportunity for related employment and meet the needs of employers, they should closely consider labor market projections. Labor market projections could help institutions better project the number of graduates needed to meet the demand of employers. Which may result in institutions limiting the number of students enrolling in certain programs or the elimination of certain programs altogether. This is one more effort the state can make to assure that after students have spent time and money on an applied technology education that they have the opportunity to find employment that requires their training.

Labor market projections do have some limitations. Labor market projections account for the number of positions that will be available to the job seeker. However, certain variables make projections difficult. For example, if a large number of people were to leave or migrate into the state, the labor market projection could be underestimated or overestimated respectively. Nonetheless, we believe labor market projections appear to be one of many helpful tools for program monitoring and decision making and should be used more extensively by institutions.

Program Performance Should be Considered
Prior to Large Capital Investments

With applied technology education dollars being limited, we believe the Legislature and the institutions should consider using the performance measures described in this chapter prior to making capital investments. Some institutions have received large appropriations for new or expanded capital facilities and equipment without an independent assessment of program performance. We believe assessments will help the Legislature identify certain programs that may not justify capital investment. We recommend that all future capital investments be justified with program placement results and program cost data (to be discussed in the next chapter).

Two recent examples of programs that have expanded or have asked for expansion money are the meat-cutting program at Bridgerland ATC and the automated manufacturing program at Ogden-Weber ATC. The Bridgerland ATC received an appropriation in excess of one million dollars for the relocation and expansion of the meat-cutting program. The Ogden-Weber ATC has asked for a total appropriation of close to six million dollars for fiscal year 1996 to expand the automated manufacturing program. In both of these programs the Legislative Fiscal Analyst staff have lacked the independent performance measures and uniform cost data needed to determine the value of the expenditure. Both institutions claim that the expansion is justified and that the result will be that more students are trained and placed in high-paying jobs. The Legislature and others responsible for governance should ask two questions: (1) How well are these programs performing relative to other programs throughout the state? and (2) Are these programs the best investment of the available dollars for applied technology programs? These questions can not be answered without an independent assessment of program performance and uniform cost data.

We analyzed the Bridgerland meat-cutting program to determine if the increased appropriation of a million dollars for relocation and expansion of the program appeared to be a good investment. According to our placement data, the Bridgerland meat-cutting program placed 50 percent of its graduates. This placement rate is average relative to other ATC programs we have looked at during this review. In addition, our cost data (in Chapter III)

shows the meat-cutting program is relatively expensive to operate compared to other BATC programs. This data does not mean that the investment in the meat-cutting program was unwarranted. However, this type of management information would help the institutions and legislators decide whether this is the best investment of state funds for applied technology education.

The State Needs an Independent Process
for Monitoring Placement

Because institutions do not have reliable placement data we recommend that the state develop an independent process of monitoring student placements. We found that the placement data produced by the institutions themselves can be unreliable and expensive. We believe that the Department of Employment Security has the means, with the help of legislation, to independently assess related placement results. Failure to monitor placement may be costly to the state, with some graduates not finding related placement and others returning back to schools for second degrees. Other states already using placement data to evaluate program performance have reported that the information helps them make better decisions concerning the future of their applied technology programs. Placement data will also help students make better informed decisions about career paths and ultimately give them a better chance of finding employment in their field of training.

Institution's Placement Results
  are Unreliable and Expensive

We have found the current placement follow-up process at many institutions to be unreliable and expensive. Follow-up studies are generally conducted through telephone surveys by instructors or job placement staff soon after students graduate. Some institutions have used mail surveys in place of phone calls, others have gone out and directly talked to the employers. Regardless of the approach, we found that institutions are too optimistic about the success graduates have finding related placement. In addition, institutions are spending large amounts of money for followup studies which offer incomplete and inaccurate results.

In comparison to our follow up data, we found that some institutions over-estimate the number of related placements by as much as 20 percent. Part of the reason for this may be the way institutions define a placement. Some institutions believe that if a graduate simply finds employment it should be counted as a related placement. For example, we found that one institution had considered a graduate from an auto mechanics program to be in a related job because he was working at a sheet metal company as a production associate. Another institution counted a meat-cutting graduate as related, when in reality the graduate had only

wrapped meat and had never actually cut. We believe these examples are inconsistent with the State Board for Applied Technology Education's definition of a related placement. According to the policy, a related placement is defined as: "An individual who is employed as a direct result of training in any occupation that falls within the family of occupational titles associated with the program CIP, or employed in a job title which requires competencies gained in the program." In our opinion, neither one of these examples are consistent with the definition established by the State Board for Applied Technology Education.

We found that the institution's followup studies are not only unreliable but they are also expensive. We were unable to estimate the amount spent by the ATCS to follow up on their students. However, one college alone spends approximately $30,000 a year on surveys to former students. The State Office of Education estimates that the state's 40 school districts spend about $450,000 a year in staff time and other resources to track student placements. Most of their tracking is done by program instructors. Many of the state's job training programs also spend a considerable amount of money trying to identify the employment status of former clients. If the state were to take advantage of the employment information already collected by the Department of Employment Security, we believe the state could substantially reduce the amount of money spent by the institutions for tracking student placements. For this reason, we recommend that the Labor Market Information Bureau, within the Department of Employment Security, be given the responsibility to track student placements for all applied technology programs statewide. Such a program would not only provide an independent means of evaluating the performance of the applied technology programs, but could also be done at a reduced cost.

Failure to Monitor Placement can be Costly

Failure to monitor placement can result in graduates not being able to find related employment. When students are unable to use the applied technology training they receive, it represents a tremendous waste of resources for both the state and the individual. To complete an applied technology program requires months of the student's time, and thousands of dollars in tuition and related expenses, in addition to many more thousands in state funding. It is a wasted effort if, after spending time and money to acquire training, the student does not have the opportunity to obtain employment in which the training can be used. Not only should institutions provide the training, they should also assist and inform the graduate of employment opportunities after graduation.

The results of the aviation maintenance program at SLCC and Dixie College illustrates the cost associated with not providing placement information. Information presented earlier in this chapter indicates that only 14 percent of all aviation maintenance graduates found related placement in Utah. Because jobs were so scarce many graduates either accepted unrelated employment, went back to school to get another degree, or left the state to find related employment.

Results of our follow-up study show that a total of 56 students graduated from both the SLCC and the Dixie College aviation maintenance programs. Of those 56, 35 stayed in the state and found unrelated employment, ten went back to school to get a second unrelated degree, seven showed no in-state employment history (likely moved out of state), and four found related employment here in the state. Out of the 35 who are currently in unrelated positions, some indicated to us that had they been aware of placement information prior to entering the program they likely would have chosen another program or career. Out of the ten who went back to college, most went back because they could not find related employment. This represents a considerable expense not only to the student who now invests more time and money for a second degree but also to the state who may have been able to prevent this by being aware of placement opportunities relative to the market.

We found that college officials were aware that the employment outlook was down in 1991 and yet still accepted the maximum number of students into the program. Officials told us that they were optimistic that the employment outlook would change by the time future students graduated. As a result, we found that many students were not notified about the lack of related jobs in the state. Officials are currently making better efforts to inform current students of placement opportunities prior to enrollment. Had this happened in other states, we would have seen the program being scaled down and the number of students entering the program limited. In our opinion, monitoring placement will help assure that as many graduates as possible are given the opportunity to find related placement. In addition, officials will be able to use the information to assist in making future decisions regarding the allocation of funds among applied technology programs.

Other States Independently Review Placement

Utah could benefit from adopting other states' approach to tracking and using placement data as an outcome measure. We have found some states who use placement data as an indicator of program performance. Programs in other states that are not placing graduates above a certain percentage typically lose funding for that program. One state rewards programs financially for placing graduates above a certain percentage. Other states report that having placement data has helped students make better informed decisions about career paths and has helped officials in making decisions regarding the future of applied technology education.

Kansas requires that 50 percent of its applied technology education graduates find jobs in the field in which they are trained. Programs that do not meet the 50 percent requirement are placed on probation and have three years to raise their rates. During those three years, the program receives technical assistance from the State Education Department, and if a 50 percent placement is still not achieved, the program is discontinued. Kansas reports over the years that less than five percent of all programs have failed to meet standard and were discontinued. If Utah were to adopt a 50 percent placement rate as Kansas has, approximately 40 percent of all

its programs would be placed on the first year of probation.

Missouri reports that close to 40 percent of all state funds for applied technology education are allocated based on the demand for the training and placement of the students. Demand is determined by using projections prepared by the state Employment Security Agency, and placement rate is calculated by the individual training institutions. The state provides institutions with information regarding the dollar value of each program, institutions then use the information to make decisions regarding the expansion or cancellation of programs.

For a program to exist in South Carolina, at least half of all students must find related jobs. If dropouts or leavers find related placement they also are counted. Placement rates are verified independently by the state, which involves pulling employment records, visiting employers, and interviewing students. Over the past four years, South Carolina reports an average of seven programs have been discontinued. Most were discontinued primarily on the decline in the labor market. For example, programs in body and fender repair have been discontinued because of low placement rates and wages. Wages and duration of employment are also considered for a more comprehensive labor market outcome assessment.

Florida's Legislature enacted a placement standard of 70 percent. Those programs failing to meet the standard are automatically reviewed by the Florida Department of Education. Any program in which the placement rate for completers is less than 70 percent for three consecutive years is no longer funded. Placement data is generally collected at the local level by teachers and then reviewed by a placement specialist. The Office of the Auditor General of Florida has been given authority to conduct accuracy audits of placement rates, although none have been conducted as of yet. Florida is in the process of moving to a statewide tracking system that will allow the use of social security number to identify individual employment records, post-secondary enrollment, and national military records. Once the data is collected it will be analyzed by an independent source.

Employment Security Could Track Placements. Because of the above example and others, we recommend that the Legislature authorize the Department of Employment Security to use existing unemployment insurance records to verify related placement. We believe that Labor Market Information Bureau within the Department of Employment Security would be able to make a regular and independent assessment of student placements. However, some modifications would be required in the manner in which businesses file their quarterly reports to the Department of Employment Security. Specifically, employers would need to be required to submit job title and hourly wage information along with the current data they are already submitting for each employee covered by the system. This information is essential, without it Employment Security would have difficulty determining related placement for many of the graduates.

Along with determining placement results, average wage data could also be reported if employers were to submit an hourly rate. Employers currently report quarterly wage

information. However, since not all graduates work the same amount of hours it is impossible to calculate annualized wage data without knowing an hourly rate. Employment Security has indicated that an added benefit to collecting wage information may be that employers can use the information in place of salary surveys, currently being done by many employers.

In our opinion, monitoring placement results and wages is important because it will allow the state to demonstrate that it is doing all it can to assure that students not only get training, but have the opportunity to use it afterwards. Employment Security, if authorized, would report results back to the institution to be used in making decisions regarding the direction or possible continued existence of applied technology programs.

Recommendations:

1. We recommend that the Legislature require the Department of Employment Security to collect and report information regarding the placement status of the graduates of all applied technology programs within the state of Utah and provide an appropriate methods for funding such a program.

2. We recommend that the Department of Employment Security collect graduate placement data using the definition of related placement and the policies developed by an ATE governing authority.

3. We recommend the Legislature amend section 53A-17a-131 (2) (a) of the **Utah Code** to require Utah employers to submit job title and hourly wage information for all employees to the Department of Employment Security

4. We recommend that the Legislature or the governing authority establish a minimum performance standard (percentage) for the placement of graduates and the number of years programs falling below that standard will be given a probationary status. If improvement is not satisfactory after the probationary period, appropriations to the program could be reduced or eliminated.

5. We recommend that the governing authority for applied technology education and the institutions consider labor market projections to help make future decisions regarding program performance.

6. We recommend that starting in fiscal year 1998, the Legislature require program placement data and individual program costs (as outlined in this report) before approving any major appropriation increase.

Chapter III
Applied Technology Program Costs Should
be Uniformly Managed

A uniform cost management system should be established for applied technology programs. In order to strategically govern applied technology education, applied technology program costs at the colleges and ATCs should be managed uniformly. By doing so, the money spent for applied technology education could be efficiently and effectively managed across ATCs and colleges. Also, applied technology programs could be strategically governed using uniform cost system data with the placement data recommended in Chapter II. However, at present, there is no uniform cost management process for the governing authority of applied technology education. In addition, the current financial and management information systems are inadequate for monitoring costs at the program level. Because the management of program costs is important to the oversight function and strategic governance of applied technology education, we recommended that the Board of Regents and the State Office of Education require their institutions to adopt a uniform set of procedures to generate program cost information.

We audited the cost management systems for applied technology programs in response to legislator questions about applied technology program costs. Legislators want to know if it costs more to provide applied technology training in the colleges than the ATCs. Audit staff developed a consistent method to identify the 1993 program costs of the ATCs and colleges to answer this question. We found that applied technology program costs vary from institution to institution. However, we found it generally costs more to provide applied technology training at the colleges than at the ATCs. Although there are many factors that influence program costs, the higher costs at the colleges are largely due to a higher salary rate per instruction hour. On the other hand, this audit has not considered curriculum, qualitative, and other differences that exist between the ATC and college systems. These differences may also be responsible for the higher costs of the college programs.

Because the colleges and ATCs use different methods to account for student enrollment, we had to develop our own method to compare the costs of the two systems. The ATCs use student enrollment hours and the colleges use credit hours to measure student enrollment. Previous comparisons of college and ATC costs have relied on a multiplier to convert credit hours to student clock hours. However, we found that the use of a single multiplier would have been inaccurate because some courses require students to spend more time in class for every credit hour earned than others. For this reason, we decided to calculate the actual clock

hours for each course rather than try to estimate them using a multiplier. To do this, we used the colleges course schedules for each program to compute the amount of clock hours for each course. This, multiplied times the number of students enrolled in the course produced a total count of student clock hours similar to those reported by the applied technology centers. This approach allowed us to compare the costs of programs in terms of both the hours of instruction or "instruction hours" and in terms of the total student clock hours.

This study does not include all applied technology courses offered at the colleges and ATCs. Both ATCs and colleges offer a wide range of specialized applied technology courses including custom fit, continuing education, and remedial courses which are aimed at specific client groups. Because these courses are provided on a private contract basis to businesses or through special state and federal programs, we did not include them in our analysis. Our analysis is limited to courses aimed at providing applied technology skills to the general public. These include college applied technology courses which generate credit hours and regular applied technology programs at the ATCs.

Program Costs Vary From Institution to Institution

The cost to provide a applied technology program varies from institution to institution. For example, the cost to provide an electronics program or a welding program differs among colleges and among ATCs. However, college applied technology programs generally cost more per hour to offer than applied technology center programs. In six of the seven programs compared, the colleges have a higher direct cost per clock hour and instruction hour. In addition, we found that for all applied technology program expenditures the colleges cost about 70 percent more than the ATCs. It appears that higher salary expenditures per instruction hour contribute to the higher college costs. In addition, the cost differences are also influenced by distinctions between the ATC system and college system. For instance, the ATCs have an open entry/open exit instructional setting that allows for more instruction time daily than the more structured college instruction setting. This means the ATCs get more instruction time per dollar spent, thus making their costs lower than the colleges. On the other hand, we also looked at the cost per graduate, and even though the colleges cost more per hour than the ATCs, we found that for selected schools the cost per graduate is about the same at the colleges as at the ATCs.

Differences between the ATC and college systems forced us to develop a common activity basis to compare program costs. The two systems use very different measures of student activity. Because applied technology centers do not offer college credit and because they are part of the public education system, they use student enrollment hours as the basis of tracking student activity. Colleges, on the other hand, use credit hours as their measure of student

activity and do not account for the actual time students spend in an instructional setting. To overcome this, we developed two measures of student activity: the student clock hour and the instruction hour.

We used the cost per student clock hour and cost per instruction hour to compare the ATC system to the college system. We determined that the most reasonable method to compare the two systems would be to calculate the actual amount of instruction time provided in college and ATC courses. To do this the length of time instruction was offered to students in each applied technology program was calculated, including lab time. From the amount of instruction time we developed two measures: the student clock hour, and the instruction hour. The student clock hour captures the total amount of time one enrolled student received instruction; and the instruction hour is the amount of time instruction could be provided to students in the program. By dividing each of these measures into the total expenditures for each program, the cost per student clock hour and the cost per instruction hour were determined.

Looking at the costs per student clock hour and instruction hour is important to the oversight and strategic governance of applied technology education offered by ATCs and colleges. This information, along with placement data, can be used to make strategic decisions on offering and managing applied technology programs. By strategically overseeing applied technology education, the governing authority can more efficiently and effectively provide this training to students.

In this section, we look at the cost to provide applied technology education at the colleges and ATCs a few different ways. First, we analyze the direct cost per student clock and instruction hour for seven comparable programs at the ATCs and colleges. Second, the total average direct and overhead costs of providing all applied technology programs at the colleges and ATCs are compared. Lastly, we look at the cost per graduate for selected colleges and ATCs. Moreover, we address some reasons for the higher college costs, and we address the tuition and fees paid by students in the two systems.

Colleges Have Higher Direct Costs

The colleges have higher direct costs than the ATCs. We compared the direct cost per student clock and instruction hour of seven similar applied technology programs. In six of the seven programs, we found that the colleges have a higher cost per student clock hour and instruction hour. Direct costs are those costs that are directly incurred to offer a program. These usually include salaries, employee benefits, supplies, materials, and capital equipment.

The Colleges Have Higher Direct Costs per Student Clock Hour. We compared the direct cost per student clock hour of seven comparable programs offered at the ATCs and colleges. Though there were cost variances between institutions, in six of the seven programs, the colleges had a higher direct cost per student clock hour than the ATCs. Figure VI

illustrates the program cost results.

	Business Info Sys	Building Construct	Electronics	Automotive	Computer Drafting	Machine Shop	Welding
Figure VI **Cost Per Student Clock Hour** **1993 Direct Costs of Instruction**							
BATC	$2.94	$4.53	$3.82	$3.54	$3.05	$5.34	$4.26
DATC	2.65	-	3.21	2.72	2.92	5.95	3.45
OWATC	3.38	2.70	3.43	-	2.15	4.06	3.56
SVATC	3.67	4.92	6.16	3.22	2.95	-	9.34
UBATC	2.16	4.00	-	5.15	3.15	-	3.05
ATC AVG	**2.88**	**3.89**	**3.80**	**3.50**	**2.73**	**5.18**	**3.89**
CEU	-	3.65	4.03	4.88	5.85	5.25	3.49
DIXIE	4.83	2.56	-	6.91	18.61	-	-
SLCC	4.85	7.18	7.27	5.74	5.96	-	5.17
SNOW	-	6.39	3.27	8.18	9.05	-	-
SUU	3.07	-	8.27	-	20.11	-	-
UVSC	4.93	5.97	9.55	3.74	3.31	4.17	4.95
COLLEGE AVERAGE	**4.59**	**5.96**	**7.62**	**5.07**	**5.03**	**4.39**	**4.68**

Figure VI shows that program costs vary from institution to institution. It also shows that if the college system is compared to the ATC system for these programs, the colleges cost more per student clock hour. Student clock hours measure the maximum amount of time enrolled students could be taught in class. Therefore, the cost per student clock hour represents the cost to instruct one enrolled student for an hour. Thus, Figure VI illustrates that it costs more to teach a student per hour in the colleges than in the ATCs.

Colleges Have Higher Direct Costs per Instruction Hour. We use the cost per instruction hour to identify a college's and ATC's cost to provide one hour of course instruction regardless of the number of students enrolled. The cost per instruction hour captures the underlying cost (i.e., salaries, benefits, equipment, and supplies) to offer a program. This is

an important measure because it controls for the effect of enrollment on program cost. Enrollment has an inverse impact on the clock hour cost of a program--the more enrollment the lower the cost, and the lower the enrollment the higher the cost. Figure

VII identifies the cost per instruction hour for eight similar programs at the colleges and ATCs.

	Business Info Sys	Building Construct	Electronics	Automotive	Computer Drafting	Machine Shop	Welding
Figure VII **Cost Per Instruction Hour** **1993 Direct Costs of Instruction**							
BATC	$56.14	$43.15	$42.45	$47.61	$56.56	$45.40	$80.82
DATC	47.18	-	47.94	37.54	72.23	118.08	47.31
OWATC	58.95	55.61	63.71	-	48.89	32.83	41.43
SVATC	32.28	39.46	43.94	49.98	50.39	-	44.48
UBATC	43.29	22.31	-	76.21	24.54	-	52.32
ATC AVG	**51.79**	**42.52**	**48.52**	**49.98**	**54.28**	**64.05**	**53.13**
CEU	-	34.52	38.28	56.30	74.20	75.69	37.93
DIXIE	66.37	45.47	-	83.32	178.48	-	-
SLCC	74.18	90.81	75.46	74.25	92.64	-	42.66
SNOW	-	101.82	41.68	52.30	90.16	-	-
SUU	90.81	-	90.68	-	294.25	-	-
UVSC	112.58	88.21	148.42	96.84	72.36	77.68	62.15
COLLEGE AVERAGE	**85.38**	**79.75**	**90.91**	**76.65**	**90.73**	**77.17**	**45.67**

Although there are significant differences among programs and institutions, Figure VII demonstrates that as a system the colleges cost more per instructor hour than ATCs. This means it generally costs more to provide one hour of instruction in the college system than in the ATC system.

Cost per instruction hour and cost per student clock hour need to be considered together. Instruction hours represent the amount of time an instructor is in the classroom to teach students. In addition, this measure captures the underlying cost to provide one hour of class, regardless of the number of students enrolled in the class; and the cost per instruction hour reveals whether cost differences per student clock hour are caused by high or low enrollment. For example, Sevier Valley ATC's electronics program costs $6.16 per student clock hour, the

highest of all ATCs. However, the electronics program's cost per instruction hour is $43.94, the second lowest for all ATCs. This indicates that the high cost per student clock hour is attributed to low enrollment. Without the cost per instruction hour it could be mistakenly construed that the underlying cost of providing the Sevier Valley ATC's electronics program is relatively high. But, in this case the cost per instructor hour reveals that the underlying costs of salary, equipment and supplies are relatively low.

Total Average Cost for all Programs is Higher at Colleges

The college system has higher total average costs per instruction hour for all programs. In analyzing the costs for comparable programs at the ATCs and colleges, it may have been possible that we selected the most expensive programs at the colleges. Therefore, to get a more accurate picture of what costs are at the institutions, we felt that it would be helpful to analyze total vocational program costs. This means we summed the total expenditures for all programs at colleges and ATCs and divided the total expenditures by the total instruction hours for all programs. Looking at total average cost for all programs tells us what it costs on average to offer all the applied technology training at colleges and ATCs. We looked at this cost three ways: the direct cost per instruction hour, the overhead cost per instruction hour, and full cost per instruction hour. The full cost per instruction hour is the direct cost plus overhead expenses such as administrative costs, building maintenance and utilities, and student services. Figure VIII documents the results.

INSTRUCTION	DIRECT COST	OVERHEAD COST	FULL COST
Figure VIII **Total Average Program Costs** **1993 Cost Per Instruction Hour**			
BATC	$50.42	$31.11	$81.53
DATC	49.48	48.52	98.00
OWATC	53.89	51.05	104.94
SVATC	42.54	29.65	72.19
UBATC	43.55	51.98	95.54
ATC AVERAGE	**48.76**	**42.37**	**91.13**
CEU	80.16	90.26	156.31
DIXIE	76.23	82.89	159.12
SLCC	74.34	55.02	129.36
SNOW	75.70	105.41	181.11
SUU	108.41	118.91	227.32
UVSC	96.83	84.85	181.68
COLLEGE AVG.	**82.33**	**72.27**	**154.60**

Figure VIII shows that when total applied technology program expenditures are compared to the total amount of instruction time, the direct, overhead, and full cost per instruction hour is higher at the colleges. Looking at the ATC average and college average in Figure VIII, the direct cost is 69 percent more per instruction hour at the colleges, the overhead cost is 70 percent more per instruction hour at the colleges, and the full cost is 70 percent higher per instruction hour at the colleges. Thus, in addition to finding that the colleges have higher costs for the eight programs we compared, they also have higher total average costs for all applied technology programs.

Cost per Graduate is About the Same at the Colleges and ATCs

Our analysis found that the cost per graduate is about the same at selected colleges as it is at selected ATCs. For 1993, it cost $13,000 per graduate at Utah Valley State College and

$10,600 per graduate at Salt Lake Community College. At the Davis ATC the cost per graduate is $9,300, and the cost per graduate is $11,300 at Bridgerland ATC. We calculated the cost per graduate by dividing the total direct expenditures for all programs by the total graduates from those programs. This analysis excludes the students that left prior to completing their programs.

The cost per graduate is an important efficiency outcome measure. In the past, the State Office of Education has suggested that this measure be used to evaluate program performance. In our opinion, it makes sense to compare the amount of money the state puts into a programs against the number of students who complete it. However, when comparing the cost per graduate, it is important to recognize that the focus of the ATCs and colleges are different, and this needs to be considered when using this measure to compare colleges and ATCs. The colleges train students toward a degree and the emphasis is on graduating. Whereas, the ATCs train students with enough skills to get a job. Because the emphasis is on getting job skills, some ATC students leave to take a job before completing their programs. In our opinion, this difference in emphasis shows in the cost per graduate. Although the college programs cost more than the ATCs, the cost per graduate is about the same. This means that the colleges have a higher graduation rate than the ATCs. It is necessary to consider these system differences when comparing the cost per graduate of the ATCs to the colleges.

Reasons for Higher College Costs

Though the colleges and ATCs offer applied technology education, they do it in different ways. We were limited in explaining the costs of the ATCs and colleges by these system differences and time constraints. Therefore, we have attempted a general explanation of cost differences between the ATCs and colleges by analyzing the largest cost area. We looked at the amount spent for salary expenses. Colleges spend more for salaries per instruction hour than ATCs. Because salaries make-up most of the direct cost to provide a program, we found that the higher salaries contribute to the higher college costs. In addition, we looked at costs for overhead such as academic support, institutional support, student services, and operation and maintenance. However, we found that for each dollar spent for instruction, the ATCs and colleges spend about the same amount of money for overhead expenses.

In addition, to looking at specific cost areas, we addressed some of the system differences between ATCs and colleges. For example, even though the colleges cost more than the ATCs, more of the cost of instruction is paid by the student in the form of tuition and fees at the colleges than the ATCs. Lastly, we note that legislators need to consider qualitative distinctions when looking at the program costs of the ATCs and colleges.

Salaries Influence Higher Program Costs. Higher salary rates make college costs higher. Salary is very influential on the cost of instruction. At the colleges 87 percent of the direct cost of instruction is made up of salaries and benefits. At the ATCs 74 percent of direct costs

are consumed by salaries and benefits. Therefore, it is logical that the cost differences between the colleges and ATCs are directly influenced by salary.

We found that colleges pay more for salary costs per hour of instruction than ATCs. On average the colleges pay $53.89 per hour of instruction for salary. Whereas, the ATCs only pay $27.37 per hour of instruction for salary. This means the colleges pay 97 percent more per hour of instruction than the ATCs.

Because the colleges have a higher salary rate per instruction hour, it does not necessarily mean that college instructors are paid more than ATC instructors. We did not evaluate the amount of salary paid per instructor for the colleges and ATCs. Rather, the higher salary rate means that the colleges spend more for salaries per each hour of instruction. There are two reasons for this. First, included in college vocational program salaries are the portion of a dean's salary that is for classroom instruction, the salary of department secretaries and other support staff, and the salary of department chairs. The ATCs do not have any of these salary expenses.

The second reason is there are differences in program instruction time which contribute to the higher cost per instruction hour at the colleges. College instructors usually teach applied technology courses on a class period basis. For example, a drafting course may be taught by an instructor each day for three hours. This produces 15 instruction hours a week. On the other hand, at an ATC an instructor may teach the same drafting course each day for six hours, totaling 30 instruction hours a week. Instruction time scheduling can explain these differences in instruction hours between ATCs and colleges.

ATCs and colleges offer applied technology instruction in two separate ways. The ATCs have an open-entry system where an instructor is in the class for about six hours daily. Students come and go from class at different times. While in class students work independently, and the instructor is there to provide the necessary teaching and guidance to help the student. Because of the open-entry system, an instructor may teach many different students during the six hours.

In the college system, on the other hand, applied technology education is generally provided in a more structured setting. There are set class and lab schedules in which students enroll. These schedules dictate the amount of instruction time for a course. Therefore, even though an instructor may work a full day, he or she may only teach three or four hours of class a day because that is all that is scheduled. For the remainder of the time, the instructor may prepare class material, grade and evaluate student progress, and give student consultation.

These differences in instruction time influence the cost per instruction hour. To calculate the cost per instruction hour, we divided the total salaries paid by the total hours of instruction provided. Because of the differences between the college system and ATC system in offering instruction, the ATC salaries are spread over more hours of instruction than college salaries.

As a result, even if the salaries were paid at the same rate, it would cost more per instruction hour at the college because the salaries are applied to fewer instruction hours.

Lastly, salary differences between the ATCs and colleges are also caused by some ATC practices. For example, some ATCs hire part-time instructors at lower wages and less benefits than full-time instructors receive. These practices bring down salary per instruction hour costs for ATCs.

Capital Equipment Expenses Have Little Impact. There is an assumption that capital equipment significantly contributes to the cost of applied technology programs. We tested if capital equipment expenditures were influential on cost differences. We found that equipment expenditures influenced the cost of some programs at the colleges and ATCs. However, capital equipment has little impact on the cost per instruction hour for each system because capital equipment expenditures are only four percent of direct costs at colleges and eight percent of direct costs at the ATCs. Therefore, we found that expenditures for salaries have the most influence on program costs.

Students pay More of the Revenue at Colleges

Student tuition represents a larger portion of the revenues of college programs than it does at the ATCs. Consequently, the state does not bear as much of the cost of instruction at the colleges as it does at the ATCs. During the 1992-93 school year, the average tuition paid by full-time students attending the state's five community colleges was $1,207. During the same year, the average tuition paid by the students attending the state's applied technology centers (for students who are required to pay tuition) was $835. The result is that the students pay for a greater portion of the cost of their education at the colleges than they do at the ATCs. Figure IX describes the tuition and fees as a percentage of the total revenue for the each college and ATC.

Figure IX
Percent of Revenue From Student Tuition and Fees 1993

Bridgerland ATC	5%
Davis ATC	10%
Ogden Weber ATC	11%
Sevier Valley ATC	7%
Uintah Basin ATC	8%
ATC Average	**8%**
College of Eastern Utah	13%
Dixie College	23%
Salt Lake Community College	30%
Snow College	21%
Southern Utah University	21%
Utah Valley State College	32%
College Average	**26%**

The data in Figure IX indicates that colleges generate an average of 26 percent of their total revenues from student tuition and fees. By comparison, the ATCs generate an average of only 8 percent of their revenue from student tuition. There are two reasons why tuition represents a larger portion of the total revenues college. First, tuition is higher at the colleges than at the ATCs. Second, only adults pay tuition at the ATCs. High school students attending ATCs do not pay tuition. The full cost of their education is paid by the state instead.

What this means is that even though the cost of college training is higher, the students themselves pay for a portion of that higher cost. However, it is important to note that the higher tuition rates paid by college students do not compensate for the entire added cost of providing training at the colleges. Even when the higher tuition rates are considered, it still costs the state more to provide applied technology training at the colleges than it does at the applied technology centers.

Qualitative Differences Exist Between the two Types of Institutions. State policymakers need to consider the inherent differences that exist between the colleges and ATCs. We were asked to find a common approach for evaluating the costs of providing applied technology education within the two education systems. To the best of our ability we have done that by applying a common definition of instruction costs to common measures of student activity. However, our analysis does not account for any qualitative differences that exist between the two systems.

The applied technology programs offered by the colleges and the applied technology centers are based on two different philosophies about how to prepare individuals for the workforce. The two styles come from different beliefs about what is best for the student and what employers are most in need of. The colleges offer a broad-based education that generally leads to the student obtaining a degree. This training usually takes two years to complete, and students are required to take more classes than just those necessary for their area of emphasis. Because students are studying their subject area for a longer period of time, they may obtain a more advanced level of training at the colleges than they would at the ATCs. Moreover, students earn college credits for their applied technology training at the colleges. These credits may be transferred to other schools and may be applied to higher degrees.

To meet this broader purpose, the colleges offer more services to students. These services may include things such as libraries, museums, extra-curriculum activities, sporting teams, and student government associations. Providing these services to students increases the cost of instruction at the colleges.

The ATCs on the other hand, specialize in providing students with the skills necessary to get an entry level job. Students learn enough of a particular applied technology skill to get a job and usually do not go on for advanced training. In addition, students are not required to take general education type courses, such as English and Math to obtain a certificate.

We did not evaluate these qualitative differences between the ATCs and colleges. Therefore, we do not know what impact they have on the cost of providing applied technology education. However, we believe it is a matter that legislators should taken into account when considering the program cost information provided in this chapter.

Even though the qualitative differences between programs makes it difficult to compare program costs, this is still basic information which each institution needs to monitor the efficiency of their programs. For this reason, we recommend that the colleges and ATCs both dramatically improve their abilities to manage costs at the program level. In the following section we identify a number of areas which need to be improved so they can provide the kind of cost information needed by managers, state boards and legislators.

Some Inconsistencies Were Found
in Higher Education's Information Systems

While conducting our study of program costs we discovered some inconsistencies in the way that colleges manage their cost data. We were not asked to audit the individual cost accounting systems or the student information systems of the colleges, nor did we review the accuracy of the Cost Study in the Utah System of Higher Education Data Book. However, in the process of collecting financial and student activity data for applied technology programs, we found some inconsistencies with both the financial accounting information and the student enrollment information systems. Inconsistencies in either the accounting of program costs or in the calculation of credit hours can compromise the accuracy of a uniform cost management system.

We are concerned that inconsistencies in the financial and student information systems will impact the uniform cost management of applied technology programs. If individuals colleges do not track financial and student activity data the same way, then applied technology program costs cannot be compared from college to college. In addition, the inconsistencies we discuss in this section are reported to legislators and other state officials in the Cost Study section of the Utah System of Higher Education Data Book. The cost study section of that report presents information on the costs to educate a full time student at the colleges and universities. We are concerned that this information is not being prepared in a consistent way.

Some Inconsistent Reporting Practices are Used to Generate Higher Education Financial Cost Data

We identified some inconsistencies in the data provided by institutions for Higher Education's cost study. We found that some costs were incorrectly reported and that several institutions are using different methods to allocate direct instruction expenses. In addition, some institutions do not use a consistent approach in accounting for their instruction costs. Finally, we question whether the higher education system is using a consistent approach to assign credit hours. We base our findings on information we gathered and verified in the process of collecting vocational program cost data. Because we did not audit the accuracy of the information submitted to the cost study, we do not know the full extent to which these problems exist. However, we believe these inconsistencies need to be addressed in order to establish a uniform cost management system.

Some Costs Were Incorrectly Reported in the Cost Study. We are concerned that colleges and universities may be including vocational FTEs produced with funds not reported

in the cost study. If this is the case, the cost per vocational FTE in the cost study may be understated. For example, at one university we found a dairy herd management program that did not report any costs but was shown as producing 7.8 FTEs. At another college we found a truck driving program that reported 38.5 FTEs in the cost study but did not report the $138,504 spent to generate them. In both cases, the schools stated that they did not include the costs because the programs were not state funded. We believe that the Board of Regents should make sure that colleges are accurately reporting FTEs and the dollars used to generate those FTEs.

Some Institutions are Using Inappropriate Methods to Allocate Costs. According to Board of Regent policy, direct instruction expenditures should be allocated on a student credit hour basis. However, of the eight colleges and universities audited, only one college is following the method. We found that three colleges are using different methods to allocate vocational education expenses. Of these three colleges, two different allocation methods are used. This means that colleges are not consistently accounting for or reporting vocational expenditures to the Board of Regents. Consequently, we are concerned that when the data is presented in the cost study report, the costs reported may not be entirely comparable.

The other four colleges have good accounting systems and report their actual vocational expenditures. These colleges do not need an allocation method to report their expenditures. We found these colleges to have consistent and reliable financial reporting systems.

In addition, we are concerned that allocation methods are used to estimate vocational expenditures. We believe that the Board of Regents should require all colleges to account for actual vocational expenditures, and not use allocation methods to estimate costs. Identifying actual vocational program expenditures is essential to a establishing a uniform cost management system.

Lastly, we found that colleges and universities are not including the same costs in their vocational instruction expenditures. Most basic instruction expenditures are included by all schools, however, expenses such as computer labs, classroom furnishings, and administrative dean activity are not being accounted for consistently. We believe that in order to have a uniform cost management system, the Board of Regents should require all colleges to consistently report instruction expenditures.

Vocational Cost Study Data is not Audited.   The inconsistencies found in financial reporting and how the cost study is prepared may be attributed to the fact that the regents staff do not audit the financial data in the cost study. Several administrative staff at the colleges and universities indicated their cost study data had never been audited and that our office was the first to ever inquire about the allocation method they were using to prepare the cost study. Moreover, one institution could not even show us the necessary documentation they used to produce the financial information they reported in the cost study. The individual explained that nobody had ever verified or questioned his method, so he did not see a need to save the

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documentation.

With what appears to be limited management control by regents staff over the vocational data reported in the cost study, reliable or consistent financial data reporting cannot be assured. Our audit revealed that one institution's financial expenditures for vocational education included expenses not for vocational programs. At another institution, we found expenditures for a farm and ranch management program included under Academic Support, which is an indirect expense allocated to all programs. These costs actually belong under Instruction, which accounts for all direct instruction expenses. However, the FTEs of the farm and ranch management program were included in the cost study. This means that the cost per FTE for that program was not accurate.

We conclude that the Board of Regents should improve the effectiveness of the management control system to ensure reliable financial data is reported in the cost study. Such a management system is an important part of assuring uniform cost management among the colleges.

Credit Hours are not Awarded Consistently

We question whether the state's colleges are using a consistent method for awarding student credit hours to applied technology courses. Because credit hours is the primary measure of student activity, it is important that a uniform approach be used to award credit hours. Any inconsistencies in the awarding of credit hours can impact the accuracy of management information used by state officials to make appropriations, establish teacher workloads, and set tuition rates.

At the beginning of this audit we considered using a conversion factor to convert college credit hours into contact hours because this was the approach that had been used in previous studies. However, when we reviewed the data used by Higher Education and the Board for Applied Technology Education to determine their conversion factors, we found significant differences in the ratio of student clock hours to credit hours. For example, the applied technology courses for one institution had an average ratio of 15.54 student clock hours to each credit hour. This figure was used to calculate the overall rate at which FTEs could be converted to student clock hours. However, when we considered the data on a program by program basis, we discovered some significant deviations from that average. The ratios for individual programs range from a low of 10 hours per student clock hour for a fire science program to a high of 22.4 for a graphic/commercial arts program. What this means is that if we had used a standard conversion factor to convert credit hours to student clock hours, we would have dramatically overstated the actual cost per student clock hour for one program and understated the cost for the other. For this reason, we decided we would not be able to develop a reliable multiplier to convert credit hours to contact hours.

During the course of our audit, we calculated the actual student clock hours for each applied technology course offered in the higher education system. When we reviewed the data we observed many differences in the amount of time students spend in class and the number of credit hours awarded. The general guideline for lecture courses is that one hour of instruction per week during the term should earn a student one credit hour. For example, a three credit hour course should be scheduled for three hours of class time a week for ten weeks. This would total 30 hours of instruction time during a quarter. However, we found the colleges and universities do not use a consistent methodology for assigning credit hours to applied technology courses. We found many courses which required significantly more hours of class time instruction for the number of credit hours awarded.

ATC Student Information is Inconsistent

Although we found the ATCs do use a standard set of financial reporting practices, they do not use a consistent and reliable approach for managing student information or for tracking enrollment hours. Because legislators and other state officials rely on student information as the basis for making many important management decisions, we believe that applied technology centers need to make sure the student information they report is reliable and consistent. For example, the analysis of unit costs in this chapter compared the costs of each program to student enrollment hours. For this type of unit cost analysis to be accurate, both the program costs and the student enrollment must be reported accurately. In addition, an analysis of student placements such as the one we performed in Chapter II requires that student information be accurately reported. However, to generate our analysis of unit costs and placements, we had to extensively rework much of the student data provided to us. Because this is essential management information required for the effective governance of applied technology education, we believe the applied technology centers need to adopt more uniform approach for managing student information.

Student Information Systems do not use Consistent Definitions

Legislators asked us to provide some basic information regarding the demographics and enrollment status of students at the state's five applied technology centers. However, we could not provide this information because the data was not consistent from ATC to ATC. The lack of reliable enrollment data also made it very difficult for us to identify a population of students for which we could track placements.

According to State Office of Education policy, the ATCs are supposed to use several different categories to describe the status of their students. Students are given an enrollment status such as "preparatory," "occupation update," or "custom fit" to describe the student's

background and reason for attending the ATC. When they leave, students are given a status of "completer" or "leaver." These definitions allow information to be gathered on student demand and utilization of the ATCs. This information is valuable to the strategic management of the ATCs. However, we found that these terms are not used consistently by all ATCs.

Legislators asked us to provide specific demographic information about the student populations are served the ATCs. However, we were unable to do so because the ATCs do not use consistent definitions in their student information systems. The lack of consistent student information systems also limited our ability to conduct the follow-up study reported in Chapter II. In the process of conducting our follow-up study, we found that some students were given a "preparatory" status even though they already had fairly good jobs and continued those jobs after they completed their ATC training.   Other ATCs would have given these students "occupation update" status. As reported in the previous chapter, our follow-up study did not include data from the Ogden-Weber ATC because they do not even use the term completer to describe students. With these inconsistencies existing, the ability to strategically govern the ATCs as a system is significantly compromised.

Inconsistent Reporting of Membership Hours
Causes Additional Reliability Concerns

We identified several inconsistencies in the way ATCs account for their student enrollments. Some institutions report the actual class time for instruction. For example, if class is held for a 50-minute period, institutions are supposed to report the course as 50/60ths of a membership hour. However, others will include the five or ten minutes between classes as instruction time. This can make a significant difference in how much revenue the institution can generate from state funds. For example, one ATC has 85-minute class periods but reports 1.5 membership hours. This results in an over-reporting of nearly 6 percent of the membership hours and funds generated by the course. According to our estimates, this ATC reported 15,675 membership hours more than it should have. In terms of the funding, these membership hours were equivalent to $77,119 in appropriations which the ATC would not have received had they complied with State Office of Education policy.

We believe this problem with the inconsistent management information reflects a deeper problem with the governance of the applied technology centers. The inconsistencies among the ATCs, in our opinion, is attributable to the fact that the governance of the ATC system has largely been delegated to the individual ATC boards. It appears, to us that the local boards of the ATCs exercise primary oversight over the internal management of the ATCs. In order to assure effective oversight at the state level, the standards set by the statewide governing authority need to take precedence over the local administration of ATCs.

Applied Technology Education Should Have
a Uniform Cost Management System

We compared the costs of applied technology programs at the ATCs and colleges in response to specific questions from legislators about what it costs to offer programs. We have answered this question as best we can by controlling for inconsistencies within the college and ATC information systems and by controlling for inconsistencies between the ATC system and college system accounting methods. We have also recommended that the program cost data be looked at in the context of the qualitative differences between ATCs and colleges. Because this is the first comprehensive attempt to compare the program costs of the ATCs and colleges, and because there are inconsistencies in the current information systems and incompatibilities between them, we believe that cost information should not be used for decision making purposes until a uniform cost management system is established.

In 1993, over $60 million dollars were spent for applied technology programs at the ATCs and colleges. Although individual institutions, such as Salt Lake Community College, Utah Valley State College, and most ATCs have accounting systems that track how this money was spent by program, neither the State Office of Education or the staff of the Commissioner of Higher Education's office track the costs of individual programs on an annual basis.

A uniform cost management system would improve applied technology education governance in many ways. Specifically, with a uniform cost management system in place governing authorities could assure that the millions of dollars spent for programs are being used efficiently and effectively. In addition, a uniform cost management process combined with the placement data recommended in Chapter II would allow state officials to think and act strategically in deciding how applied technology education is offered in the state. For example, college and ATC administrators could consider the placement rate and program cost before deciding to enlarge or cutback the program. Lastly, a uniform cost management system would advance and improve the already established regional planning policies for applied technology education. For instance, regional planners could use the information to decide what institutions should offer certain programs based on cost and performance analysis.

Establishing a uniform cost management system requires two things. First, a consistent method for measuring student enrollment and instruction activity needs to be defined for both ATCs and colleges. We recommend using instruction hours as one measure. Instruction hours capture the actual amount of time students and instructors spend in the instruction setting. Using instruction hours removes the need for conversion formulas when comparing the ATC and college enrollments. Second, instruction hours need to be compared to the actual cost of individual applied technology programs. Therefore, standard accounting

procedures which consistently track the cost of individual applied technology programs need to be adopted by the ATCs and colleges.

Recommendations:

1. We recommend that the ATE governing authority develop policies and procedures for the common measurement of instruction time and student enrollment at the ATCs and colleges for ATE programs.

2. We recommend that the ATE governing authority establish policies and procedures for a common accounting standard which will accurately report applied technology costs by program.

3. We recommend the ATE governing authority require each institution to annually report for each program the cost per instructor hour, cost per student clock hour, cost per graduate or any other management control information it may require.

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Chapter IV
Governance of Applied Technology Education
Needs to be Strengthened

Some type of governing authority needs to be empowered with the ability to implement the administrative reforms described in the two previous chapters of this report and in a letter report issued previously. In Chapter II we recommend that the state monitor the employment status of students after they graduate. In Chapter III, we recommend that the state regularly monitor program costs. These administrative controls should enable the Legislature and other state officials to make sure that applied technology programs are aimed at the jobs needed most by Utah employers. Currently, the state is not as responsive as it needs to be because those who govern applied technology education have not required institutions to provide them with the data they need to hold them accountable for their performance and cost effectiveness.

This report, however, is not the first to recommend these reforms. As mentioned in Chapter I, a 1982 report by the Legislative Auditor General and several other reports since then also identify the need for these same administrative reforms. One reason the state has still not been able to adopt these reforms is that the state's approach for overseeing applied technology education is so fragmented. To assure that these reforms are adopted, we recommend that the Legislature follow the steps described in this chapter to strengthen the governance of applied technology education in the state so these administrative reforms can be effectively implemented.

Strategic Oversight Needs to be Improved

The administrative reforms we suggest (monitoring student placements and program costs, and a unified funding process) are important management tools which can help state officials to think and act strategically about how to meet the technology training needs of the state's work force. Just as any private business cannot survive without continually monitoring costs and the needs of its customers, so too must those responsible for applied technology education receive regular feedback regarding how effective their programs are at placing students in the job market and at what cost. In addition, just as any prudent business person would evaluate the potential risk and returns before making a large investment in capital facilities, legislators need to be provided with management information before making decisions on increased appropriations for ATC programs. This process of continually evaluating program effectiveness and costs is what we refer to as the strategic management of applied technology

education.

Although the colleges and ATCs claim to be highly responsive to the needs of employers and that their programs are cost effective as well, they do not regularly receive the kind of information to manage their programs strategically. They claim their programs are market driven and that students are provided with the technology training needed most by Utah employers. However, officials within the education community need to be much more aggressive in monitoring the performance and costs of their programs. They should then use that information as they make decisions regarding how to operate their programs and to justify the requests for appropriations which they submit to the Legislature.

Governing Authorities Should Increase the Use of Placement Data to Monitor Program Effectiveness

In Chapter II, we recommend that the state develop an independent process for monitoring the employment status of the students who graduate from the state's applied technology programs. This data should be used by a statewide governing authority that has the responsibility to compare the number of students graduating to the number of jobs available in each occupational field. This oversight function needs to be unified at the state level in order to make sure that the output of all of the state's college, ATC and high school programs are considered together. For example, our data suggests that the graduates of the state's welding programs may not be finding jobs because there are far more welding programs than can be justified by the state's job market. This may suggest that the state needs to limit student entry or cut back on the number of welding programs offered. However, if this decision is left to each institution to make, or even to the public education and higher education systems to regulate independently, it will be very difficult to force any single institution to drop a program. For this reason, the review of program placements needs to be considered for the entire state as a whole. This should be a part of a comprehensive strategic planning process overseen by some statewide governing authority.

Governing Authorities Should Use Cost Data To Evaluate Program Efficiency

The costs of individual programs should be another factor which state officials use when considering how to invest the state's applied technology funds. In Chapter III we identify a number of useful measures of program costs. For example, the cost per clock hour, cost per instruction hour and cost per graduate were some measures we provided. In addition, other useful measures of program costs not developed for this audit might include the cost per placement or the cost of salaries and benefits per hour of instruction. The use of several different cost and performance indicators should enable state officials to more easily identify system inefficiencies. However, to generate this information, the state will have to require

each institution to use uniform accounting standards for monitoring program costs and student enrollment.

Program cost data should also be useful for the state governing authority when evaluating the applied technology strategic plans for each region. For example, the declining need for welders discussed earlier can be easily identified with placement data but the cost data is necessary to assist state and local governing authorities in identifying where to limit enrollment or which programs to eliminate. The strategic planning process would be the forum for making this decision. Each region could be required to prepare a strategic plan in which the placement rates and costs for individual programs would be described as well as the local strategy for improving the performance of poorly performing programs.

Funding Process Should Reflect the State's Updated Strategy

The funding process should also play an important role in the state's effort to think and act strategically about applied technology education. The funding mechanism needs to be consistent from region to region but also as flexible enough to allow the applied technology system to respond quickly to the changing needs of their regions. In a letter report issued previously, we pointed out that some regions of the state receive more funds than others because they happen to draw from a better set of funding mechanisms than other regions do. The problem is that the state's process for funding applied technology education is made through several different funding mechanisms and appropriations bills and does not follow any coherent funding strategy. In a letter report on ATE funding released in December 1994 we recommended that the state develop a more uniform basis for funding each region of the state. To make sure each region is thinking and acting strategically, the use of funds for applied technology education should be contingent upon the approval of each region's strategic plan by a statewide governing authority for applied technology education. Whatever funding formula is developed, state officials need to make sure that the funding mechanism is not so restrictive as to limit the ability of local regions to focus their efforts on local priorities.

The administrative reforms we have proposed should help the education community to be much more sensitive to the needs of the marketplace and much more aggressive in monitoring program effectiveness and efficiency than they have been in the past. Currently, the state is not as responsive as it needs to be because those who govern applied technology education have not required institutions to provide them with the data they need to hold them accountable for their performance and cost effectiveness. As mentioned in Chapter I, the education community has been regularly asked to adopt these administrative reforms. We believe the reason the state has not been able to implement these procedures is that the governance and administration of applied technology education is fragmented.

Fragmented System of Governance
has Contributed to Lack of Administrative Controls

One reason the placement, cost systems and funding reforms have not been put in place is due, in part, to the fragmented nature of the state's governance of applied technology education. By design, both the colleges and the ATCs are administered locally. As a result, the colleges and ATCs tend to be highly independent of the administrative oversight of the staff at the State Board for Applied Technology Education and the Board of Regents. Obviously, the two boards need to resist the temptation to "micro manage" the institutions, but they also need to find ways to hold the institutions accountable for their performance. At present, it appears the institutions in both systems may be too autonomous. This independence has made it difficult for the state to require the institutions to adopt the kinds of administrative reforms needed to hold them accountable for their placements and cost effectiveness. In order to govern the applied technology system more effectively and to adopt the administrative reforms we suggest, an effort needs to be made to bring the institutions within a common system of accountability and administrative controls.

Oversight of the Colleges Is Highly Decentralized

By design, the administration of the college system has been delegated to the college presidents and their administrative staff. As a result, each of the colleges do not all use the same management tools to administer their programs. For example, the colleges do not all use the same software package or data configuration to manage their student enrollment information. In addition, the colleges are not careful enough about the accuracy of the data they submit to the Board of Regents. The lack of consistency in the course information was a problem which we faced when we used the regent's database of course offerings to calculate the instruction hours we used in the cost study described in Chapter III. We had to spend several weeks consulting with local administrators in order to correct some of the inaccuracies in the course schedules submitted to the Board of Regents.

Because they do not have common financial accounting and student information systems does not mean that the colleges are not well managed. We observed that some institutions, Salt Lake Community College in particular, have very good management information systems and administrative controls. However, most of the decisions regarding the strategic use of funds for applied technology education are generally made by the local college administrators. In order to bring the applied technology system under a single strategic planning process, the colleges should be required to comply with a uniform set of administrative policies and accounting procedures and participate in a regional strategic planning process.

ATCs are not Complying With State Board Policies

For many years, the State Office of Education (SOE) has had difficulty requiring ATCs to comply with SOE policies and reporting requirements. This was observed in a 1982 study and appears to still be the case today. In a 1982 report by the National Center for Research in Vocational Education, the consultants observed that SOE officials were *"unable to get timely, accurate data from local schools"* and that *"local school officials appear to have veto power over unpopular standards."*

During our audit, we found that the SOE staff still have a problem obtaining reliable and timely information from the institutions. Much of the data we obtained from the State Office of Education computer databases was not current or incomplete. One of the former state director of applied technology education at the State Office told us that he often felt frustrated that he could not get the information he needed from the ATCs. He said he felt that he did not have the power he needed to require ATCs to provide him with accurate and timely data that he needed to manage the system effectively. Current SOE administrative staff have expressed similar concerns about their inability to require the ATCs to comply with SOE reporting policies.

As we conducted our audit of the placements and cost data at the ATCs, we also found the ATCs are not complying with many SOE policies and procedures. For example, the State Office requires ATCs to report the outcome of training in terms of whether students are completers or leavers. We found that the ATCs use several different procedures for tracking student outcomes. This made it very difficulty for us to compare the information submitted by each institution to the State Office of Education. This is also one of the reasons we were not able to include the Ogden-Weber ATC in our follow-up of student placements. We asked them to provide us with a list of students who had completed their programs but they could not provide us with such a list because they do not document their student completers in the manner required by the State Office of Education.

When we asked ATC staff why they were reluctant to follow the policies and procedures issued by the SOE, many told us that the SOE policies did not take into account the many differences which exist among the ATCs. In addition, many ATC administrative staff told us that they do not believe the SOE staff understand the needs of the ATCs and their operations. Throughout the system, we had many officials tell us that they did not believe that applied technology education was a high priority for the State Office of Education.

One ATC superintendent indicated he was reluctant to allow the State Board for Applied Technology Education to develop a certain policy for the ATCs because they *"may not understand the unique role and mission of the ATCs."* Another ATC administrator expressed a reluctance to comply with SOE direction because *"they do not understand how the open*

entry/open exit system works." This person commented further that there was a frequent turnover in the Applied Technology Director position at the State Office and that they never hold the position long enough to really understand how an open entry education system works. Finally, an administrator at another ATC said that on several occasions he has asked the state office staff to clarify certain policies and reporting practices. However, he said he found that the State Office staff are generally reluctant to provide him with the guidance he asked for. As a result, he said the attitude among most ATCs is that *"everybody does their own thing."* Consequently, ATC officials look to their ATC boards for direction on policy matters, not the State Office of Education.

In our opinion, it is natural for local administrators to desire to operate their institutions independently of the oversight of a statewide governing authority. However, we are suggesting that a statewide governing authority is needed to hold the institutions accountable for their applied technology programs, but not to administer them from the state level. To do this, and to provide the institutions with the support they need from the Legislature and the public, will require that institutions adopt the reforms recommended in this report and use a common set of policies and reporting practices so the information they provide to the state is consistent.

Legislature Should Address
the Governance Issue

As stated, above, the Legislature needs to empower some governing authority with the ability to oversee applied technology education statewide. As with the administrative controls, the issue of governance has also been debated for years. In order to address the governance issue, we recommended that the Legislature follow a process which was first presented to the Legislature in 1982. The National Center for Research in Vocational Education (National Center) suggested that the Legislature take the following steps to address the governance issue: (1) clarify the roles and responsibilities of the institutions providing applied technology education; (2) clearly define the responsibilities that should be assigned to a governing authority; (3) consider the principles for effective governance; and (4) select from among the proposed systems of governance.

Clarify the Roles of Those who
Provide Applied Technology Training

In 1982, the National Center suggested that *"the first step in designing a structure to govern vocational education is to decide what it is the state wants vocational-technical education to accomplish."* We have come to a similar conclusion that legislators need to clearly define what it expects from the institutions which provide applied technology education

before it creates a system to govern their efforts. We suggest legislators address the following four questions having to do with institutions roles and responsibilities: (1) What is the unique purpose of the ATCs? (2) What is the responsibility of community colleges toward providing applied technology education; (3) What is the purpose of applied technology training in the public education system? and (4) What is the relationship between the education system which provides applied technology education and the state agencies which oversee job training and economic development programs?

What is the Unique Mission of the ATCs? The purpose of applied technology centers (ATCs) and how they fit into the state's overall strategic plan for technology training is unclear. Their role has changed dramatically over the years, without adequate guidance from the state Legislature. Once they were referred to as Area Vocational Centers and had a primary role of providing applied technology training to high school students. Then as federal job training funds became available, ATCs expanded their services to special, disadvantaged adult populations. More recently, some ATCs have focused on providing advanced technical training to local industry. As a result of this shifting mission, the majority of students served by ATCs are adults. As shown in Figure X, during the 1993 school year, high school students were responsible for 30 percent of the student enrollment hours at the ATCs.

Figure X					
Instruction Hours by Adult and Secondary Students					
ATC	**Adult Hours**	**Percent**	**Secondary Hours**	**Percent**	**Total Hours**
Bridgerland	727,908	71.9%	285,148	28.1%	1,013,057
Davis	534,253	61.1%	340,002	38.9%	874,256
Ogden Weber	839,351	79.6%	215,482	20.4%	1,054,834
Sevier Valley	231,488	60.5%	122,189	34.5%	353,677
Uintah Basin	202,882	60.4%	133,042	39.6%	335,925
TOTAL	**2,535,882**	**69.8%**	**1,095,863**	**30.2%**	**3,631,749**

As Figure X shows, the enrollment hours for adult and secondary students. The data show that adults comprise over two thirds of the clients served by the ATCs. This has led many to question whether an ATC is not more of a post-secondary institution rather than high school vocational center.

Even among many members of the education community, there appears to be some confusion about the exact role of the ATCs. Some have suggested that the purpose of the

ATCs is to provide technology training to "at risk" students--those who were problem students in the high schools or others who could not perform well with the regular academic curriculum of the high schools and colleges. On the other hand, officials within the ATCs themselves do not accept that definition. They believe that students who are not disciplined enough to succeed in high school will also have difficulty succeeding at the ATC. Instead, those within the ATC community believe their role is to provide all Utah working adults as well as high school students, with the task-specific technology skills needed to succeed in the work place. Some ATCs seem to put much more of their attention on serving the adult workers rather than high school students.

The fact that some ATCs and the colleges appear to have similar missions creates confusion over their respective roles. This could create a problem if the Legislature approves the construction of new ATCs in the regions currently served by community colleges. Because the ATCs and the community colleges are becoming more and more alike, it will become difficult to function effectively in the same region. For example, students enrolled in some ATC programs are often eligible for college credit. On the other hand, many college courses are now offered on an open-entry/open exit schedule much like the ATCs.

What is the Role of Colleges in Providing Applied Technology Training? The enrollment growth at the state's community colleges, particularly in the academic programs, has put a great deal of pressure on the community college's to shift their emphasis away from applied technology education and towards offering more academic courses. Some are concerned that this trend threatens the ability of the community colleges to continue to fulfill their role as the state's primary provider of applied technology education. Historically, the vast majority of applied technology training in the state occurs at the state's community colleges. Until 1987, the Salt Lake Community College and the Utah Valley State College both served as technical colleges. Their missions were then expanded to include both lower division academic programs as well as applied technology training. As a comprehensive community colleges, these two institutions are still by far the largest providers of applied technology education in the state. The Salt Lake Community College alone provides nearly as much applied technology instruction as all of the ATCs combined. Any state strategy for providing applied technology education in the state must consider the significant role played by the community colleges.

According to some, the recent efforts by some colleges to become four-year institutions suggests the colleges may be drifting away from their mission to provide applied technology education. If legislators believe that community colleges are to continue to be the primary providers of applied technology education in the state, efforts should be made to solidify that role in the state's policies and funding practices.

What Role Do High Schools Play in Providing Applied Technology Education?
Legislators need to decide whether it should be the responsibility of the high schools to prepare students to enter the job market upon graduation. Currently the primary function of applied

technology education programs in the high schools is to expose students to trades and technologies and help them acquire a few fundamental skills which will be helpful to them if they pursue a applied technology career after high school. High schools generally do not offer students enough time in class to prepare them to immediately enter the high-tech job market when they graduate.

Some school districts would like to offer their students a more advanced level of technology training than they can currently provide so students will be able to enter the job market immediately upon graduation. To do this, the Legislature would have to dramatically increase its investment in high school applied technology programs. Legislators need to decide whether it should be the mission of high schools to provide students with the level of training they need to pursue employment in an advanced technology field upon graduation or to provide an exposure to technology training and prepare students to enter a more advanced training program upon graduation. In addition, if the mission of the public school system is to provide exposure to certain trades, what should the state do to allow students desiring more advanced training to attend a post-secondary institution?

We question whether most high school students are ready to make a firm commitment to a specific career path. We interviewed several dozen high school students and found most did not have clear career goals. Most were taking their training at the ATCs to fulfill requirements for graduation or because they preferred the hands-on training of a applied technology program. Only a few high school students seemed confident that they would pursue a career in the applied technology field they were studying. When we conducted a limited test of the placements of the high school students who completed their applied technology training, we found that very few had obtained employment related to their field of training. For this reason, we believe legislators should further study the benefits of advanced applied technology training for high school students before they make large investments in high school applied technology programs.

What is the Relationship Between the Educational System and State Job Training and Economic Development Programs? Just as the ATCs and the colleges believe their mission is to help the state prepare a world class work force, there are also a number of government agencies which believe they have a similar role to play. Every year, these job training programs are preparing annual strategic plans which describe how they will help improve the job skills of the work force in each region. At the same time the applied technology education community is preparing their own strategic plans for applied technology education. The Legislature needs to decide how the efforts of these various groups should be overseen.

Responsibilities of a Governing Authority

As they take steps to create an effective system of governance, the Legislature should consider what some of the functions of a governing authority should be. Many of these were

previously presented to the Utah State Legislature in the 1982 report by the National Center for Research in Vocational Education. The major functions of governance are to:

1. **Provide Leadership, Vision, Advocacy, Visibility, and Direction.** Many within the education community believe one of the biggest problems facing applied technology education is that it does not have the stature of the academic programs. They believe the need for better trained workers is great but that the public and the education community do not seem to give it the attention it deserves. For this reason, some have suggested that within the governance structure of the education community, there needs to be an advocate for applied technology education which can petition the Legislature for sufficient funding, to provide visibility for applied technology education, and direction.

2. **Establish Goals and Policies.** The governing authority needs to be responsible for establishing the goals and policies for applied technology education in the state. We found many policy areas which have not been clarified by the existing governing boards. The lack of clear policy in these areas has made it difficult to establish effective administrative procedures for the system as a whole. For example, some of the important policy questions which have not been resolved by the current governing boards or which need further clarification include:

    a. What are the primary measures of program effectiveness?

    b. If placements are a measure of program effectiveness, how are placements to be defined, and measured? What is a related placement? Should those who leave before completing a program be counted as a completer if they find related employment?

    c. How should institutions evaluate the "placements" of students who already have a job and only want to upgrade their skills?

    d. Is it important for a student to complete a program before leaving or should students be encouraged to take a job as soon as one becomes available?

    e Should institutions be penalized for low completion rates?

    f. Should the state require that a minimum set of skills be obtained in order for a student to receive a certificate of completion in any given field or should each institution be allowed to decide what skills students must learn in order to be considered a program completer?

    g. Under what circumstances should institutions be allowed to use state funds to provide training which benefits only one firm or industry? Should the firm or

industry be required to pay more for the specialized training than regular students who take general occupational training?

h. Should a minimum level of enrollment or graduates be required for applied technology programs?

i. Is there a maximum unit cost per student clock hour which the state is willing to pay for an applied technology program?

j. Should the state fund training programs for jobs which are not readily available in Utah?

These are tough policy questions which must be addressed to ensure the operation of an effective technology training system. In the past each college, ATC and school district has been free to address many of these policy decisions on its own. We believe a strong statewide governing authority needs to resolve these issues and require institutions to comply with those policies.

3. **Oversee the Strategic Planning Process.** The state needs a central focal point for the strategic planning of its technology training efforts. Strategic plans must be developed at both the local level and then be reviewed by the state-level governing authority. These plans should contain the following: (1) a clear description of the sources and uses of all funds available for applied technology education, (2) the specific applied technology programs that are offered in the region, (3) the placement rates and unit costs of each program, and (4) a description of how the institutions within each region will combine their resources and facilities in order to minimize the cost of providing services.

4. **Hold Institutions Accountable for Performance.** The governing authority needs to establish uniform methods of evaluating program performance. This will require the governing authority to first define the goals and objectives for applied technology education. Then the governing authority should also establish a set of performance standards which institutions would have to work towards. For example, a certain rate of completion, number of students enrolled in each programs, a certain placement or wage rate for graduates, etc. Then a standard set of procedures would need to be developed to assure that each institution use the same approach for measuring student activity, program costs, placement rates and other indicators of program effectiveness.

5. **Develop a Single Statewide Budget for Applied Technology Education.** The use of funds for technology training needs to be presented to the Legislature in a single budget. Those responsible for the governance of applied technology education should be responsible for preparing and submitting a single budget request to a single legislative appropriation committee, and make sure the funding formula is fair and equitable and that separate appropriations are not used for duplicative purposes (the need for a more uniform funding policy was discussed in a letter report released previously). In addition, the governing authority needs to make sure that the funding mechanism rewards institutions for successful performance outcomes. Finally, there needs to be sufficient flexibility in the funding process to allow regions to adapt to the

changing needs of the labor market.

In summary, those responsible for governance are responsible to provide guidance, direction, support and maintain accountability of the institutions which provide applied technology education. These guidelines should be considered as legislators decide which type of governance system will be most appropriate, and at some future date, help them reevaluate how effective the governance system has been.

Legislators Should Consider
 Many Options That Have Been Proposed

Over the years, a number of groups have suggested several different ways to improve the governance of applied technology education in Utah. Most of the proposals are based on governance structures found in other states. Each approach has its advantages and disadvantages and no system is best under all circumstances. For this reason, we do not advocate one of these proposals. In addition, there may be other strategies which could be developed as well. The proposals include providing governance through:

a. The Joint Liaison Committee of the Boards of Education and Regents as described in House Bill 106 (1995 General Session).

b. The State Board of Education acting as the State Board for Applied Technology Education.

c. A third separate board for applied technology education.

d. One governing board for all of K-12, covering applied technology and academic programs.

e. The State Board of Regents acting as the State Board for Applied Technology Education.

f. A single state agency which administers all job training functions and governs applied technology education.

The Governing Authority
Should Pursue Administrative Controls

Once an improved system of governance has been developed, the Legislature should give that governing authority a clear mandate to clarify the statewide goals and policies for applied technology education and to develop administrative controls necessary to hold the education system accountable for accomplishing those goals. Of course, whether the Legislature decides to continue the current form of governance or designs a new governing structure, the education community still needs to adopt better administrative controls to ensure the applied technology system is held accountable for program effectiveness and efficiency. In order to make sure programs are effective, the state needs to monitor the performance of individual programs. Although additional performance measures may be developed, we recommend in Chapter II that the primary measure of program performance should be student placements. In addition, program efficiency should be monitored through a unified system of tracking and managing program costs. This matter is discussed in Chapter III of this report.

The administrative reforms we are suggesting should accomplish three things: (1) encourage the education community to think more strategically about what programs are offered and make the them more responsive to the technology training needs in their regions, (2) promote the efficient use of public funds for applied technology education, and (3) increase the credibility of the applied technology education in the state and help legislators feel more confident about providing additional funding for this important area.

Recommendation:

1. We recommend that the Legislature designate a governing authority to oversee the Applied Technology Education programs statewide.

2. We recommend that the Legislature require that the governing authority oversee a strategic planning process for all applied technology education within the state.

3. We recommend that the Legislature require that the governing authority develop policies and procedures for all applied technology education within the state.

4. We recommend that the governing authority develop a single statewide budget for all applied technology education.

5. We recommend that the Legislature have a single legislative appropriation sub-committee review the budget for applied technology education.

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Agency Response