

*"Destiny is not a matter of chance, it is a matter of choice;
It is not a thing to be waited for, it is a thing to be achieved."
- William Jennings Bryant*

Forging a Seamless Curriculum: Beginning Dialogue between Secondary and Post-secondary Report

INTRODUCTION

We, as West Virginians, stand at a crossroads. One road leads to economic competitiveness, higher standards of living, and a well-trained work force; the other, to economic decline. Which road will be traveled depends largely on the success of education reform in our state.

National reports (*SCANS, America's Choice: high skills or low wages!*), state reports (*Ready for What?*), current state statistics (*WV Report Card and Higher Education Report*), and over 900 interviews with Business/Labor, document the need for changing the current secondary and post-secondary education systems. Spurring education reform in West Virginia are state legislative actions, i.e., the passage of Senate Bill 300, Senate Bill 547, and the additions/changes to State Board of Education policies. All are designed to provide support to West Virginia school systems as they begin the difficult process of change.

In addition to legislative/policy efforts, other initiatives are helping to change the way education and training are delivered in West Virginia. One such initiative is Tech Prep/TPAD, Technical Preparation for an Associate Degree. The Tech Prep initiative calls for redefining, aligning and strengthening the community college system through quality associate degree programs linked to the secondary curriculum throughout West Virginia. These programs will provide career opportunities for more

students and a highly-skilled workforce for West Virginia.

The Tech Prep/TPAD program formally links secondary with the post-secondary education system through a seamless curriculum. *A seamless curriculum is a continuum of competencies which provides transition from one education level to another without unnecessary duplication. Student progression is based on the mastery of competencies to established standards.* It is a 4 + 2 (9th grade through 12th plus 2 years in a community college) program culminating with an associate degree or a 4 + 2 + 2 (9th grade through 12th grade plus 2 years in a community college and then returning for a baccalaureate degree) program. Tech Prep provides a forum for collaboration between education levels offering multiple entry and exit points in order that all students have numerous opportunities to acquire marketable academic and technical skills.

Institutionalizing educational reform occurs through school curricula (programs of study). Jobs Through Education Act (Senate Bill 300) sets forth a career cluster/major model for the development of the secondary level programs of study. The cluster/major format reflects a very broad clustering of career areas. Presently, six (6) clusters (Health, Human Services, Business/Marketing, Science/Natural Resources, Engineering/Technical, and Fine Arts/ Humanities) and twenty-one (21) majors are recommended (Cluster/Major Model, page 21). Students select courses (in addition to state graduation requirements) which provide a strong academic and technical foundation in their area of interest. These courses are divided into two (2) classifications - 1) career major units, and 2) recommended electives. The career major courses (recommended by business/labor and higher education as necessary for success) lay the basic educational foundation in the student's chosen career area. The recommended electives afford students a broader base of academic and technical skills in the respective career area. The selected program of study will prepare students upon graduation from high school to enter the work force, and/or go on to certificate training, and/or associate and baccalaureate degrees.

THE DIALOGUE

Associate degree chairs and faculty from West Virginia Community and Technical Colleges representative of the respective clusters were asked to participate in a workshop that focused on the secondary programs of study. A total of six (6) workshops were held each one representing a cluster.

The objectives of the workshop were to:

- 1) Determine the common core courses within the various associate degree programs within a cluster/major,
- 2) Recommend the four courses for the respective major units that they felt would best prepare students for post-secondary work in the student's major selection,
- 3) Recommend electives for students per each major, and
- 4) Provide any additional information and/or suggestions concerning the transition process to the post-secondary level.

The workshops were well attended and the participants expressed the hope that these types of meetings would continue in the future.

POST-SECONDARY RECOMMENDATIONS

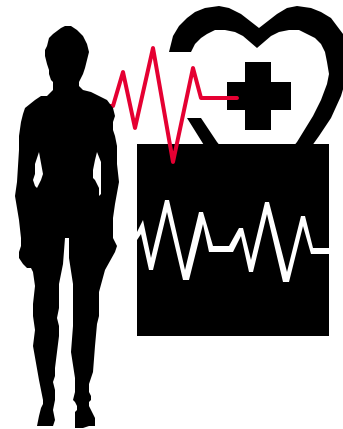
All recommendations given by the post-secondary representatives were based on the cluster/major model which reflects three preparation levels, professional, skilled/tech prep, and entry. The level a student selects is based on their career goals. The recommendations set forth in this report apply to the **skill/tech prep level** within the cluster/major model..

Cluster/Major Definition:

A career cluster is a curricular approach designed to build stronger occupational and academic

foundations, provide opportunities for student choice and increase competency levels. The approach is based on the concept that many clusters of occupations require common skills and knowledge. It is possible, therefore, to design a curriculum around a core of courses common to several related specialities.

A career major is a grouping of occupations based on significant commonalities in required tasks. It is a coherent sequence of courses that prepares a student for a first job and that--- (A) integrates academic and occupational learning, and establishes linkages between secondary schools and post-secondary institutions; (B) prepares the student for employment in a broad occupational cluster or industry sector; (C) typically includes at least 2 years of secondary education and at least 1 or 2 years of post-secondary education; (D) provides the students, to the extent practicable, with strong experience in and understanding of all aspects of the industry the students are planning to enter; (E) results in the award of a high school diploma or its equivalent, a certificate or diploma recognizing successful completion of 1 or 2 years of post-secondary education (if applicable), and a skill certificate; and (F) may lead to further education and training, such as entry into a registered apprenticeship program, or to admission to a 2- or 4-year college or university. (Definition as published by the National School-to-Work Office)



Health Cluster

There are three recommended majors in the health cluster:

1. **Therapeutic Services** - Careers within this major relate to the identification of health care needs and plan, implement and evaluate the treatment and care of those who are in need of health care services. Examples of occupations include, Dental Hygienist, Psychiatrist, Nurse, Pharmacist, and Rehabilitation Therapist (physical, occupational, etc.).
2. **Health Information Services** - Careers within this major relate to the management of medical information. Examples of occupations include Admissions Clerk, Medical

Recommended Career Major Units: **Anatomy & Physiology**
Psychology
Intro to Health Care
Biology/Microbiology

Recommended Electives: Speech
Chemistry II Clinical Concepts
Geometry Physics/PT
Computer

Applications

Other Recommendations:

All students in the health cluster should select:

3rd Math Requirement: **Algebra II**
3rd Science Requirement: **Chemistry or**
Technical Chemistry



Human Services Cluster

There are 3 recommended majors in the Human Services Cluster:

1. **Public Safety/Legal Services** - Careers in this major relate to legal and safety systems in the areas of protection and enforcement. Examples of occupations can be found in the areas of criminal justice, law offices, fire fighting, law enforcement, and military science.

2. **Social Services/Education** - Careers in this major relate to the various social systems within our society. Examples of occupations can be found in the areas of social work,

counseling, teaching, and recreation.

3. **Personal and Family Services** - Careers in this major relate to the management of human capital. Examples of occupations can be found in the areas of child care, Funeral Services, Cosmetology, and Personal Care Services.

Public Safety/Legal Services Major (Curriculum Model, Page 25)

Recommended Career Major Units:

Computer Applications

Human Relationships

- life styles, self assessment, diversity, values, interpersonal communications, sexuality, growth and development, conflict resolution

Intro to the Social Services

- sociology, psychology, political science, geography, research methods

Communications

- writing (all styles), presentation skills, use of technology/ computer literacy

Recommended Electives:

Chemistry/Technical Chem

Biology

Civics

Accounting

Speech

Sociology

Psychology

Foreign Language

Environmental/Earth Science

(Spanish)

Advanced Physical Fitness/Wellness

Social Services/Education Major

(Curriculum Model, Page 26)

Recommended Career Major Units:

Computer Applications

Human Relationships

- life styles, self assessment, diversity, values, interpersonal communications, sexuality, growth and development, conflict resolution

Intro to the Social Services

- sociology, psychology, political science, geography, research methods

Communications

- writing (all styles), presentation skills, use of technology/ computer literacy

Recommended Electives:

Anatomy/Physiology	Sociology
Chemistry/Tech Chem	Speech
Entrepreneurship	Accounting
Marketing	Foreign Language (Spanish)
Human/Child Development	
Education Majors - areas of interest	

Personal and Family Services Major

(Curriculum Model, Page 27)

Recommended Career Major Units:

Computer Applications

Human Relationships

- life styles, self assessment, diversity, values, interpersonal communications, sexuality, growth and development, conflict resolution

Intro to the Social Services

- sociology, psychology, political science, geography, research methods

Communications

- writing (all styles), presentation skills, use of technology/ computer literacy

Recommended Electives:

Anatomy/Physiology	Psychology
Sociology	Foreign Language (Spanish)
Entrepreneurship	Accounting
Marketing	
Chemistry or Biology (depends on 3 rd Science)	
Speech	

Other Recommendations:

All students in the Human Services Cluster should select:

3rd Math requirement

Geometry or Algebra II

3rd Science

Physics/PT (Public Safety/Legal Services)

Biology

It was recommended that Service Learning provide the work-based experience for this cluster.

Business/Marketing Cluster

There are five recommended majors in the Business/Marketing Cluster:

1. **Finance/Accounting** - Careers in this major relate to assembling, processing, analyzing, and communicating essential information about financial operations. Example of occupations are found in banks, finance companies, stock and bond trading companies, insurance companies, and any business operation.
2. **Management** - Careers in this major relate to supervision, operations planning, quality assurance, logistics, health and safety, human resources management and inventory/material management to improve the productivity and profitability of business enterprises. Example of occupations are found in the area of supervisory positions within public/private businesses.
3. **Administrative Support** - Careers in this major relate to areas that require problem solving and administrative skills to perform a wide range of activities including office, project, and human resource management. Examples of occupations include Data Control Clerk, Accounting Clerk, Office Clerical, and Word Processor.



4. **Marketing** - Careers in this major relate to activities which direct the transfer of goods and the acquisition of services from producer to consumer. Examples of occupations include Foods Manager, Restaurant Supervisor, Customer Service Representative, Sales Associate and Wait Staff.

5. **Hospitality** - Careers in this major relate to activities that attract customers and exceed customer expectations in a tourism or hospitality environment. There are two areas in this major - Food and Beverage and Lodging. Examples of occupations include Hotel Manager, Restaurant Manager, Chef, Marketing Director, Dining Room Manager, Prep Cook, Front Desk Clerk, Server, and Housekeeper.

Finance/Accounting Major (Curriculum Model, Page 28)

Recommended Career Major Units:

Introduction to Business/Marketing

- should be taught at the secondary level instead of the post-secondary level. Colleges are willing to share syllabi and competencies with WVDE to aid with the development of the course.

Principles of Accounting (theory and terminology)

Economics

Accounting II

Recommended Electives:

Statistics

Personal Finance

Business Law

International Business

Algebra II or Pre-Calculus

Marketing Principles

Business Computer Applications

Principles of Management/Entrepreneurship
Business Communications

Management Major

(Curriculum Model, Page 29)

Recommended Career Major Units:

Introduction to Business/Marketing

- should be taught at the secondary level instead of the post-secondary level. Colleges are willing to share syllabi and competencies with WVDE to aid with the development of the course.

Principles of Accounting (theory and terminology)

Entrepreneurship/Management

Marketing Principles

Recommended Electives:

Economics

Accounting II

Personal Finance

Sociology

Foreign Language

Psychology

Algebra II or Pre- Calculus

Advanced Computer Applications

Communications

Administrative Support Major

(Curriculum Model, Page 30)

Recommended Career Major Units:

Introduction to Business/Marketing

- should be taught at the secondary level instead of the post-secondary level. Colleges are willing to share syllabi and competencies with WVDE to aid with the development of the course.

Principles of Accounting (theory and terminology)

Advanced Computer Applications

Office Technologies

Recommended Electives:

Business Communication

Accounting II

Word Processing

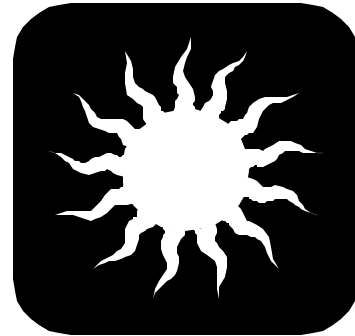
Speech

Psychology

Statistics

Alphabetic Writing

Algebra II or Pre-



Calculus

Marketing Major

(Curriculum Model, Page 31)

Recommended Career Major Units:

Introduction to Business/Marketing

- should be taught at the secondary level instead of the post-secondary level. Colleges are willing to share syllabi and competencies with WVDE to aid with the development of the course.

Principles of Accounting (theory and terminology)

Marketing Principles

Entrepreneurship/Management

Recommended Electives:

Economics

Accounting II

Personal Finance

Sociology

Foreign Language

Psychology

Algebra II or Pre- Calculus

Advanced Computer Applications

Communications

Hospitality Major

The Hospitality Major was not covered during the workshop.

Other Recommendations:

All students in the Business/Marketing Cluster should select:

3rd Math

Applied Geometry or Algebra II - It was highly recommended a fourth math of Algebra II or Pre-Calculus

3rd Science

Environmental/Earth Science

Anatomy and Physiology (medical fields)

Science/Natural Resources Cluster

There are two (2) recommended majors in the science/natural resources cluster:

1. **Agriculture/Agribusiness** - Careers in this area relate to the food and fiber system. Examples of occupations include Agronomist, Animal Scientist, Greenhouse Worker, Farm Manager, Kennel Operator, and Floral Designer.
2. **Natural Resources** - Careers in this area relate environmental management, fish and wildlife management, forestry production and management, forest products, natural resource management, and parks and recreation. Examples of occupations include Microbiologist, Environmental Scientist, Aquaculture Technician, Land Surveyor, Tree Trimmer, and Logger.

Agriculture/Agribusiness Major

(Curriculum Model, Page 32)

Recommended Career Major Units:

Foundations in Natural Resources I

- needs to include objectives that relate to scientific method, management processes, water management, marine biology, astronomy, ecology/earth science. It needs to expand the focus.

Foundations in Natural Resources II

- extension of Natural Resources I

Environmental/Earth Science

Agribusiness Production

Recommended Electives:

Principles of Technology

Geometry

Statistics

Botany

Zoology

Forestry

Dendrology

Trigonometry

Computer Applications

Natural Resources Major

(Curriculum Model, Page 33)

Recommended Career Major Units:

Foundations in Natural Resources I

- needs to include objectives that relate to scientific method, management processes, water management, marine biology, astronomy, ecology/earth science. It needs to expand the focus.

Foundations in Natural Resources II

- extension of Natural Resources I

Environmental/Earth Science

Geology

Recommended Electives:

- | | |
|-----------------------|--------------------------|
| Statistics | Botany |
| Zoology | Forestry |
| Trigonometry | Horticulture |
| Dendrology | Principles of Technology |
| Computer Applications | |

Other Recommendations:

All students in the Science/Natural Resources Cluster should select:

- | | |
|-------------------------------|---|
| 3rd Math | Applied Geometry or Algebra II |
| 3rd Science | Chemistry or Technical Chemistry |

Engineering/Technical Cluster



There are five (5) recommended majors in the engineering/technical cluster:

- 1. Transportation Technology** - Careers in this area are involved in the movement of people and goods from one place to another by land, water, and air. Examples of occupations include Air Traffic Controller, Aeronautical Engineer, Warehouseman, Avionics Technician, Automotive Technician, Aviation Technician, and Airframe and Power Plant Mechanic.
- 2. Communications Technology** - Careers in this area are involved in the designing, preparing, and sending of all types of information and messages. Examples of occupations include Electrical Engineering Technician, Electronics Engineer Technician, Fiber Optic Technician, and Computer Technician.

3. **Mechanical Technology** - Careers in this area are involved in the continuous support, maintenance, design and installation of all types of mechanical and electrical devices. Examples of occupations include Computer Technician, Industrial Engineer, Material Handler, Sheetmetal Worker, Mechanical Designer, Electro-mechanical Technician, and Mechanical Engineer Technician.
4. **Construction Technology** - Careers in this area are involved in the planning, designing, repairing and assembly of all types of structures. Examples of occupations include Journeyman Electrician, Building Inspector, Civil Engineer, Plumber/Pipefitter, Electrical Installer, Surveying Technician, and Carpenter.
5. **Manufacturing/Production/Engineering Technology** - Careers in this area are involved in the design and assembly of products ranging from large earth-moving equipment, airplanes, lawnmowers and toothbrushes to the microminiaturized parts of an electronic instrument (computer chip). Examples of occupations include Design Engineering Technician, Quality Inspector, Industrial Engineer, Welding Engineer, Draft Person, Material Handler, Industrial Engineering Technician, and Production Line Supervisor.

Transportation Technology

(Curriculum Model, Page 34)

Recommended Career Major Units:

Algebra II or Trig/Probability and Statistics

Principles of Technology II

Foundations in Engineering/Technology

- concepts in engineering design, concepts in fundamentals of computer systems, add conversions in addition to measurement accuracy, emphasis on experiential design, basic systems, and basic drafting skills

Transportation Systems

Recommended Electives:

Materials and Processes

Biology

Pre-Calculus

Communications

Trig/Probability and Statistics

Electronics

Chemistry/Technical Chemistry

Engineering Graphics/Drafting

Computer Applications

Geometry

CAD

Communications Technology (Curriculum Model, Page 35)

Recommended Career Major Units:

Algebra II or Trig/Probability and Statistics

Principles of Technology II

Foundations in Engineering/Technology

- concepts in engineering design, concepts in fundamentals of computer systems, add conversions in addition to measurement accuracy, emphasis on experiential design, basic systems, and basic drafting skills

Communication Systems

Recommended Electives:

Materials and Processes

Biology

Computer Applications

Pre-Calculus

Trig/Probability and Statistics

Chemistry/Technical Chemistry

Engineering Graphics/Drafting

Electronics

Geometry

Other Systems courses

CAD

Mechanical Technology

(Curriculum Model, Page36)

Recommended Career Major Units:

Algebra II or Trig/Probability and Statistics

Principles of Technology II

Foundations in Engineering/Technology

- concepts in engineering design, concepts in fundamentals of computer systems, add conversions in addition to measurement accuracy, emphasis on experiential design, basic systems, and basic drafting skills

Engineering Graphics/Drafting

Recommended Electives:

Materials and Processes

Biology

Computer Applications

Pre-Calculus

Trig/Probability and Statistics
 Chemistry/Tech Chem Fundamentals of
 CAD Welding
 Electronics Fundamentals of
 Geometry Machinery
 Other Systems courses

Construction Technology

(Curriculum Model, Page 37)

Recommended Career Major Units:

Algebra II or Trig/Probability and Statistics
Principles of Technology II
Foundations in Engineering/Technology

- concepts in engineering design, concepts in fundamentals of computer systems, add conversions in addition to measurement accuracy, emphasis on experiential design, basic systems, and basic drafting skills

Construction Systems

Recommended Electives:

Materials and Processes Biology
 Pre-Calculus
 Trig/Probability and Statistics
 Chemistry/Technical Chemistry
 Computer Applications
 Electronics
 CAD
 Other Systems courses

Manufacturing/Production/Engineering Technology

(Curriculum Model, Page 38)

Recommended Career Major Units:

Algebra II or Trig/Probability and Statistics
Principles of Technology II
Foundations in Engineering/Technology

- concepts in engineering design, concepts in fundamentals of computer systems, add conversions in addition to measurement accuracy, emphasis on experiential design, basic systems, and basic drafting skills

Manufacturing Systems

Recommended Electives:

Materials and Processes	Biology
Electronics	Pre-Calculus
Trig/Probability and Statistics	
Chemistry/Technical Chemistry	
Computer Applications	
Engineering Graphics/Drafting	

Other Recommendations for the Engineering/Technical Cluster:

All students in the Engineering/Technical Cluster should select:

3rd Math	Applied Geometry or Algebra II
3rd Science	Principles of Technology I or Physics

- C It was highly recommended that basic mechanical drafting be a pre-requisite to CAD.
- C It was highly recommended that a unit on **Geographic Information Systems** be included in the Communication Systems course.
- C The engineering/technical representatives felt that if students completed the career major units in any particular major within this cluster they would be prepared for all associate degrees in the engineering/technical cluster.



Fine Arts/Humanities Cluster

There are four (4) recommended majors in the Fine Arts/ Humanities Cluster:

1. **Information Services** - Careers in this area are involved with written, printed, oral, and multi-media communications. Examples of occupations include Public Relations Manager, Journalist, Copywriter, Artist, and Librarian.
2. **Applied Arts** - Careers in this area are involved in design work. Examples of occupations include Architecture, Fashion Designer, Landscaper, Interior Designer, and Seamstress.

3. **Creative Arts** - Careers in this area are involved in the performing arts. Examples of occupations include Cinematographer, Dancer, Actor/Actress, Singer, Composer, and Photographer.
4. **Liberal Arts** - Careers in this area are involved educational studies. Examples of occupations include Psychologist, Forensics Teacher, Interpreter, and Anthropologist.

Information Services (Curriculum Model, Page 39)

Recommended Career Major Units:

Communications

- verbal and non-verbal, including sign language

Art History and Theory

Computer Graphics

Journalism

Recommended Electives:

Multi-Media Presentations

Foreign Language

Computer Applications

Technical Writing

Sociology

Psychology

Entrepreneurship

Applied Arts (Curriculum Model, Page 40)

Recommended Career Major Units:

Communications

- verbal and non-verbal, including sign language

Art History and Theory

Humanities

Algebra II or Trigonometry

Recommended Electives:

Computer Graphics

Foreign Language
Design
Computer Applications
Technical Writing
Economics
Psychology
Marketing

Creative Arts

(Curriculum Model, Page 41)

Recommended Career Major Units:

Communications

- verbal and non-verbal, including sign language

Art History and Theory

Performance Based Unit

Performance Based Unit

Recommended Electives:

Forensics

Creative Writing

Drama

Foreign Language

Performance Based Courses

Computer Applications

Psychology

Entrepreneurship

Liberal Arts

It was recommended not to include Liberal Arts as a major. The state graduation requirements cover all pre-requisites for this area.