

Recognizing Aquatic Veterinary Competency: Education, Opportunities, and a Refined Process for Advancement



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AVMA, Schaumburg, IL USA

WAVMA International Conference – Athens, Greece
July 12-14, 2010

The Primary Intent

Stimulate your thoughts & discussion on:

- What aquatic vet skill sets do vets want or need?
- What criteria are needed to judge these skill sets?
- What's needed to credential/recognize vets with these skill sets?
- Where can vets get, or what educational opportunities need to be put in place, for these skill sets?
- What system is needed to certify vets as competent to practice aquatic veterinary medicine?



To Cover – Part 1

Issues

- Demand for aquatic veterinarians
- Aquatic species diversity
- Separating aquatic veterinary medicine from aquatic pathobiology
- Identifying of core aquatic veterinary skill & requirements



To Cover – Part 2

Traditional Education & Opportunities

- Vet school curricular & post-graduate degrees
- Recognition of core & specialized skill competency – accrediting veterinary education & Board Certification
- Existing programs with aquatic veterinary medical focus



To Cover – Part 3

Solutions & the Way Forward

- Continuing Education & Professional Development (CEPD) programs
- Influencing veterinary school core curricula
- Developing Aquatic General Practitioner & Board Certification systems



The Ultimate Goal

A system that clearly identifies veterinarians as competent to practice aquatic veterinary medicine and provide the full range of veterinary services to all clients

How do we get there?



Who Needs Aquatic Veterinarians?

Potential Clients/Employers

- Animal owners (pet/ornamentals, aquaculture)
- Exhibitors (public aquaria)
- Industry organizations (NGOs – veterinary, aquaculture)
- Veterinary Academics (teaching, research, extension)
- Aquatic support industries (pharmaceutical, etc)
- Government agencies (regulatory, natural resources)

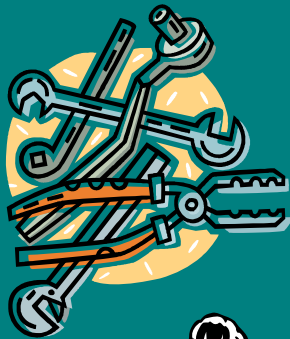
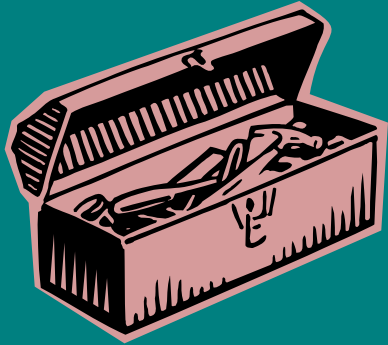


Diverse Needs & Demands for Aquatic Veterinary Services

- Diversity of aquatic industries
- Diversity of species
- Diversity of veterinary medicine & veterinary services
- Expansion of:
 - Ownership - aquaculture (farmed seafood) & pets
 - Industry-support (pharmaceutical) industries
 - Regulatory requirements, disease outbreaks



An Aquatic Veterinarian's "Toolbox"



What do you think is
in the current
veterinary toolbox?

What do you think is
missing?



Veterinarians v. Fisheries Biologists



Aquatic Veterinarians

- Provide direct veterinary services to clients
- Highly focused medical education/training
- Legal, regulatory & liability responsibilities
- Require additional aquatic biological skills

Fisheries Pathobiologists

- Research & veterinary-support services
- Diverse biological system education/training
- No legal, regulatory & liability responsibilities
- Require additional aquatic health/disease skills



Aquatic Veterinary Academic Programs – what's out there?

Some Veterinary School examples:

- University of Thessaly
- Prince Edward University

Some Non-veterinary School examples

- Stirling University
- University of Arizona





University of Thessaly
Faculty of Veterinary
Science

Postgraduate Studies

Council and Administration

Departments

Undergraduate Teaching

Postgraduate Studies

Clinical Work

Research

Contact Details

Students' Union

University of Thessaly

The need for specialisation within the veterinary profession and the diversity of knowledge related to veterinary science underline the requirement for postgraduate training.

[Degree of Doctor of Veterinary Science](#)

[Msc studies in "Aquaculture" - "Aquatic Animal Health"](#)

[Postgraduate training program](#)

European Veterinary Speciality in Small Ruminant Health Management - further details in www.ecsrhm.eu

www.vet.uth.gr/english/teaching_postgraduate.html





UPEI UNIVERSITY OF PRINCE EDWARD ISLAND CENTRE FOR AQUATIC HEALTH SCIENCES

Centre For Aquatic Health Sciences

Overview

The Atlantic Veterinary College (AVC) is fully accredited by the Canadian Veterinary Medical Association and the American Veterinary Medical Association, and has equivalency recognition from the Royal College of Veterinary Surgeons in the United Kingdom. AVC graduates consistently achieve high standing on professional licensing examinations and have excellent employment opportunities around the globe.

In addition to a Doctor of Veterinary Medicine (DVM) degree program, AVC offers Master of Science (MSc), Master of Veterinary Science (MVSc) and Doctoral (PhD) programs within the Faculty of Veterinary Medicine.

Graduate students may focus on one of several aspects of animal health, including: basic and applied biomedical research, fish and animal health research, clinical research on specific diseases and control procedures, environmental health and animal welfare. The Masters or PhD programs may be combined with a clinical residency program for qualified veterinarians.

www.upei.ca/avc/





Undergraduate

Masters

[Sustainable Aquaculture](#)

[Aquaculture Systems](#)

[Aquaculture And The Environment](#)

[Aquaculture Nutrition](#)

[Aquaculture Business Management](#)

[Aquaculture And Development](#)

[Aquatic Veterinary Studies](#)

[Aquatic Pathobiology](#)

[Sustainable Aquaculture By
Distance](#)

[Aquatic Resource Development By
Distance](#)

[Entry Requirements](#)

[Frequently Asked Questions](#)

[Apply](#)

PhD & MPhil

Continuing Professional Development Short Courses

Aquatic Veterinary Studies

The aim of the Aquatic Veterinary Studies programme is to provide you with a sound training in aquatic animal disease investigation, prevention and control in the marine and freshwater environment. The emphasis is placed on gaining a holistic understanding of production systems and the management factors which can contribute to disease, as well as the pathogens themselves. To qualify for any of the postgraduate awards within this programme you must hold a veterinary qualification.

Programme structure

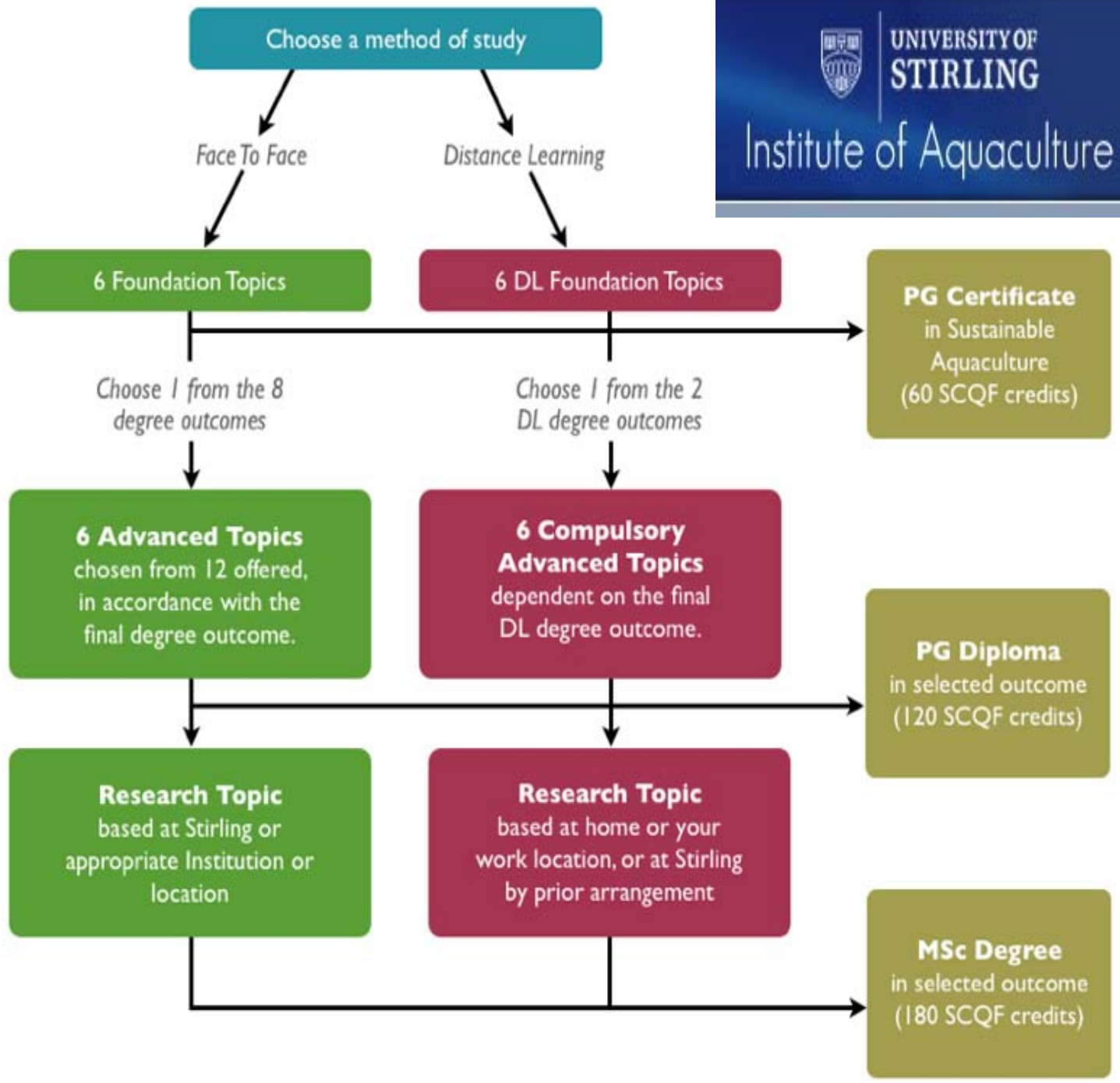
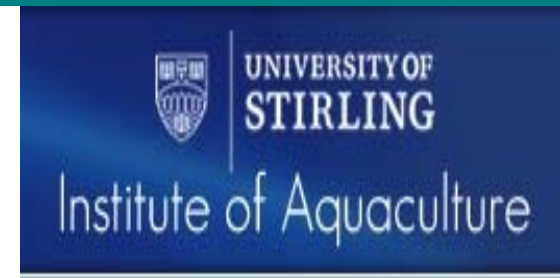
The programme is modularised so that SCQF credits are accumulated at the end of each assessed topic towards a PG qualification. All routes to achieving your qualification are possible on a full-time or part-time basis to fit with your individual needs.


To gain a PG Diploma in Aquatic Veterinary Studies:

- 6 foundation topics
- 6 compulsory advanced topics

For the degree of Master of Science in Aquaculture Veterinary Studies:

- 6 foundation topics
- 6 compulsory advanced topics
- a research project.





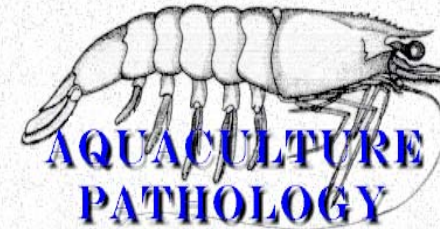
THE UNIVERSITY OF ARIZONA
Veterinary Science & Microbiology

Department
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Graduate Info:
[Microbiology and Pathobiology \(MicroPath\)](#) | [MicroPath Admission/Application](#)
[TA Application](#) | [Courses](#)

Service
[Aquaculture Pathology](#)
[Clostridial Enteric Disease](#)
[Arizona Veterinary Diagnostic Laboratory](#)

Other
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[Room & Teaching Equipment Reservation](#) | [Shared Research Equipment & Facilities](#)
[Information for Graduate Faculty](#) | [Information for VSM Faculty](#) | [Peer Review Committee](#)



● **Diagnostic services**

Part of the function of our lab is to diagnose diseases of cultured penaeid shrimp. We receive samples of shrimp from farms and research facilities all over the world. Our diagnostic services are available to the shrimp farming community and research institutions for a minimal fee. To view our diagnostic fee schedule, click [HERE](#). This schedule provides current prices for our diagnostic services.

● **The Short Course on Shrimp Disease** ([click here to download brochure](#))

We also host, annually, a short course on the diagnostic techniques currently available for shrimp diseases. This includes the prevention and control of these diseases. This course is open to anyone in the aquaculture or mariculture field, although preference will be given to those who work with shrimp in some form or another. The course is an intensive two week study which combines lectures and hands-on laboratory sessions to educate the students in the methods used for the detection and diagnosis of the diseases present in cultured penaeid shrimp. The course can be taken for University credit, either through transfer or directly (if the student is currently enrolled at the University of Arizona). **Note:** Students wishing to enroll in the Shrimp Pathology Short Course should already hold a Bachelors degree in Fisheries Biology, Aquaculture, Microbiology, or a related field, and speak the English language proficiently.

To request more information regarding the Short Course click [HERE](#).



Veterinary School Accreditation Systems

WHO?

WHY?

HOW?



Who are the real beneficiaries



AVMA Council on Education

"Top 6" Quick Links

- Select from the list -

Go

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Accreditation of Veterinary Colleges

About the COE

The accreditation process

Upcoming COE site visits

COE Standard newsletter

FAQs

Accreditation of Veterinary Technology Programs

About the CVTEA

The AVMA Council on Education (COE) accredits DVM or equivalent educational programs. The AVMA COE assures that minimum standards in veterinary medical education are met by all AVMA-accredited colleges of veterinary medicine, and that students enrolled in those colleges receive an education which will prepare them for entry-level positions in the profession.

- [About the COE](#)
- [The accreditation process](#)
- [COE Policies and Procedures](#)
- [Veterinary colleges accredited by the AVMA](#)
- [Upcoming COE site visits](#)
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- [COE accreditation logo](#)



Council on Education

"Through the accreditation process the AVMA Council on Education is fully dedicated to protecting the rights of the students, assisting the schools/colleges to improve veterinary medical education, and assuring the public that accredited programs provide a quality education. "

— Accreditation Policies and Procedures of the AVMA Council on Education



COE Accredited



- US/Canada – 28 US/ 5 Canada Vet Schools
- 149 US Vet Technical Schools
- Europe
 - University of London, University College Dublin, University of Glasgow, University of Edinburgh, State University of Utrecht
- Australia/New Zealand
 - Murdoch University, University of Melbourne, University of Sydney, Massey University



European Association of Establishments for Veterinary Education (EAEEV)



Mission/Objectives

- Support, promote and develop veterinary education in Europe in all its aspects
- Monitor harmonization of minimum education standards for veterinary surgeons per Directive 2005/36
- Maintain a list of Evaluated and Approved Institutions



European Coordination Committee for Veterinary Training (ECCVT)

Members

- European Association of Establishments for Veterinary Education (EAEVE)
- European Board for Veterinary Specialization (EBVS)
- Federation of Veterinarians of Europe (FVE)

Mission

- ensure a comparably high standard of pre- and postgraduate veterinary training



Aquatic Veterinary Continuing Education & Professional Development -- CEPD

- Criteria needed for evaluation as appropriate for veterinary medicine
- Giving CEPD credit for veterinary participation
- Use in annual veterinary licensing/ registration
- What CEPD programs are currently available



Aquatic Veterinary CEPD Programs – what's out there?

Some Veterinary examples:

- Veterinary Conferences
- Veterinary run programs

Some Non-veterinary examples

- Fisheries Biologist/Pathobiologist Conferences



What Prepares Veterinarians for Aquatic Veterinary Medicine?

Educational Opportunities

- Pre-veterinary degrees/ courses (Biology/ Fisheries)
- Veterinary curricula (primary medical disciplines)
 - Aquatic veterinary medical clinical rotations/ externships
- Post-graduate degrees (MS, PhD, DSc)
- Internships/ residencies
- Veterinary Continuing Education programs
 - Supplemental areas (understanding industries, water chemistry, emerging diseases/ issues/ medical techniques)



The Core Aquatic Veterinary Toolbox – what is lacking?

Relative to primarily finfish, crustacean and molluscs

- Unique anatomy and physiology
- Environmental evaluation (water quality)
- Industry structure and function (farmed seafood and ornamental fisheries) [and natural resource (wild) aquaculture?]
- Pathobiology of select diseases.
- Unique clinical diagnostic techniques and technologies
- International, federal, state/provincial and local regulations affecting aquatic veterinary medicine practice



Online CEPD

PROSPECTUS

DESCRIPTION
GOALS
OUTLINE
REQUIREMENTS
HOUSE RULES



Please Login

Login Name

Password

Remember me on each visit.

Login



AQUAHEALTH ONLINE

DESCRIPTION

The need to observe an effective health management program is important to the success of an aquaculture project. This was demonstrated since the late 1980s until now where lethal diseases continue to devastate aquaculture projects in many countries. Since 1988, the SEAFDEC Aquaculture Department (AQD) has launched classroom-based training courses on health management in aquaculture on a regular basis to meet the ever-growing demand for knowledge and skills.

What used to be taught purely in a classroom in a teacher-student face-to-face setting can now be taught in a distance-learning mode. It is convenient and practical for a learner to acquire knowledge and skills in health management at his own place and at his own time. A learner only has to have an Internet access to communicate with highly qualified teachers or with fellow learners. This new and exciting learning experience via information technology is made possible by the partnership of SEAFDEC AQD and the University of the Philippines Open University (UPOU) in developing this elearning course, AquaHealth Online, for short.

The course will cover up-to-date knowledge on fish and crustacean diseases, the causal organisms and the tried and tested methods of disease prevention and control.



GOALS

The aim of this course is to introduce to you the principles of health management in aquaculture. By the end of the course you should be able to:

1. **RECOGNIZE** diseased shrimps and fish;
2. **IDENTIFY** the cause(s) of the disease;
3. **EXPLAIN** how a disease develops;
4. **APPLY** preventive and control measures to lessen the risks posed by the disease;
5. **USE** appropriate techniques for the preparation of samples for disease diagnosis.

OUTLINE

The course is divided into twelve (12) modules:

Unit I – Introduction to Fish Health Management

Module 1: Impact of Disease Development in Aquaculture

Unit II – Infectious Diseases of Fish and Crustaceans

Module 2: Viral Diseases

Module 3: Bacterial Diseases

Module 4: Fungal Diseases

Module 5: Parasitic Diseases and Pests

Unit III – Non-infectious Diseases of Fish and Crustaceans

Module 6: Nutritional Diseases

Module 7: Environmental and other Non-infectious Diseases

Module 8: Harmful and Toxic Algae

Unit IV – Disease Diagnosis, Prevention, and Control of Fish and Crustaceans

Module 9: Histology as a Tool in Disease Diagnosis

Module 10: Serology and Molecular Techniques in Disease Diagnosis

Module 11: Immunity and Biological Methods of Disease Prevention and Control

Module 12: Physical, Environmental, and Chemical Methods of Disease Prevention and Control



Advanced (specialization) Credentialing Board Certification

- Veterinary Board Certification – U.S., RCVS, EU, Australia
 - Diplomate/ Diploma (e.g. Surgery, Pathology, Public Health, etc) –

- American College of Zoological Medicine
 - Diplomate – Aquatic Subcategory (DipACZM)



Other Credentialing Systems

■ Royal College of Veterinary Surgeons

- Certified in Fish Health & Production (CertFHP)
- Diploma in Fish Health & Production– (DFHP)

[2007 changes – General Veterinary Practice (CertGVP);
Advanced Veterinary Practice (CertAVP)]

■ Australian College of Veterinary Sciences – Aquatic Animal Health Chapter

- Member (MACVS-AAH)
- Fellow (FACVS-AAH)



Recognizing Aquatic Veterinary Knowledge & Skills

Options

- Ensure adequate Pre-vet school education
- Incorporate aquatics in vet curricular
- Require post-graduate academic education
- Develop CEPD programs
- Board certification

Implementation Ease

- Hard to determine
- Curricular too full
- Competing interests
- Relatively easy
- A long, complex process



Refining the Process, Programs & the Way Forward

What's needed – processes for:

- Determine core skills needed for aquatic veterinary medicine?
- Evaluation of current education programs – which provide core skills?
- Global cooperation to establish & agree on:
 - Core skill requirements & standards
 - Appropriate education/training programs
 - System for recognizing skill competency



Summary – the Needs

Clients, industry development, support industries, governments and the veterinary profession are ill-served without:

- Identifying required core and specialized aquatic veterinary education & skill sets
- Providing education and experience opportunities for expanding these skill sets
- Developing and implementing a credentialing system for recognizing core and specialized competency in aquatic veterinary medicine



Summary – the Solution

Building a system to fill the Aquatic Veterinary Toolbox requires:

- Leadership (facilitation) from an international aquatic veterinary organization (WAVMA?)
- Full evaluation of current aquatic veterinary education and credentialing programs & systems
- Collaborative harmonization of programs to achieve a common international standard



Summary – the Solution

Filling the Aquatic Veterinary Toolbox

- Inclusion/expansion of aquatics in veterinary student curricular & externships, post-graduate internships & residencies, CEPD programs.
- Implementation of Aquatic Veterinary Competency Recognition Programs – possibilities:
 - Certified Aquatic GP (short-term)
 - Aquatic Veterinary Board Certification (long-term)



Existing Aquatic Veterinary Organizations to Assist

- Australian College of Veterinary Sciences (ACVSc) / Aquatic Animal Health Chapter (AAHC)
- Fish Veterinary Society (FVS)
- Canadian Association of Aquaculture Veterinarians (CAAV)
- Eastern Aquaculture Veterinary Association (EAVA)
- Association Française des Vétérinaires Aquacoles (L'AVAQ)
- Sociedad Chilena de Médicos Veterinarios Especialistas en Acuicultura (MEVEA)



**Thank you for your
attention**

Questions?

Discussion?



Consider

- If we don't develop programs to best suit us, others will develop these programs for us ... and those may not be best suited for us.
- It behooves every man to remember that the work of the critic is of altogether secondary importance, and that, in the end, progress is accomplished by the man who does things.
- In any moment of decision, the best thing you can do is the right thing, the next best thing is the wrong thing, and the worst thing you can do is nothing.

Theodore Roosevelt

