

Observation, evaluation and recommendation on student thesis defence- Advanced Aquaculture Program

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The following are my observations and recommendations regarding the Advanced Aquaculture Program (AAP) for Undergraduates at Can Tho University (CTU), Can Tho City, Vietnam, which has been a cooperation between CTU and Auburn University (AU), Auburn, Alabama, USA.

These observations and recommendations are based on the premise that the goal of the program was to bring the undergraduate curriculum in Aquaculture at CTU up to international standards.

My involvement at CTU has been teaching Fish Genetic Enhancement and Resources Management, a graduate level course at AU. This course is a comprehensive offering that covers basic genetics, traditional selection and quantitative genetics, genetic biotechnology, molecular genetics and population genetics using primarily fish, but also all aquatic animals to teach the concepts and the success of these genetic enhancement options. Additionally, I was privileged to participate in the first set of students undergraduate thesis defenses, and also to observe student seminars of groups 1 and 2 regarding their study tour to Thailand. My observations and recommendations are based on my experience with the students and faculty regarding my class, and my observations of their presentations in the thesis defenses.

Observations

The goal of bringing the undergraduate curriculum in Aquaculture at CTU up to international standards, and the student performance up to international standards was highly successful.

In general, I am very, very impressed with the AAP and with the students. This program at CTU has continued and is continuing to improve dramatically, and is a program to be proud of. The student's command of English has steadily and impressively improved during the last 3 years.

When comparing batches 1-3, the English skills appear to be improving based on my initial exposure to each class. Based on their examination scores, their ability to learn Aquaculture Genetics has slightly improved with each successive class.

In regards to achieving international standards, I strongly believe that has been achieved, although the comparisons to AU and other institutions are difficult to make. The AU program for undergraduates emphasizes the core curriculum (mathematics, biology, English and other core requirements). Thus, AU fisheries and aquaculture students do not have much time for exposure and do not have much exposure to courses in fisheries and aquaculture, and seldom take our graduate level

courses. *In this regards, the education in fisheries and aquaculture that the AAP CTU students are receiving is vastly superior to that of the AU undergraduates. However, I cannot assess the education that the CTU students are receiving in the basic sciences and math.*

Performance of the CTU students taking Fish Genetic Enhancement and Resources Management. *Considering that the AAP students are undergraduate students taking a graduate level course(I believe in challenging them with the same material that I present at AU) ; this course has a huge amount of material, information and concepts; and 4 months of material is being presented in 2-2.5 weeks time; the AAP student performance and the knowledge gained is outstanding. In every class, there have been at least 2-3 students whose performance is at such a high level that I wish I had assistantship money to recruit them to AU. It is difficult to compare these students to AU fisheries undergraduates. I have only had 2 AU undergraduates take my course in 30 years, and the last time was about 25 years ago. The AU students took much more difficult exams than the CTU students, and the AU students did very well on the exams. CTU students achieved similar scores, but on much easier exams. However, the AU students had the advantage of having 4 months to learn the material versus the 2 weeks for the CTU students. Of course, the AU students had the disadvantage of having other courses at the same time.*

Undergraduate Thesis

AAP students at CTU complete an undergraduate research project, write a thesis, give a presentation and orally defend the thesis. *This aspect of the program definitely enhances the undergraduate program, and brings it to international standards or above.*

The quality of the oral presentations was, in general, quite good, and what little I read of the theses was quite good. It was particularly impressive that this output is from undergraduate students, not graduate students. Examiners provided challenging questions in an aggressive manner. Students did a good job of maintaining composure, especially since they were so young and the professors sometimes quite stern. Overall, the visual aids were of excellence quality.

AU fisheries undergraduates seldom conduct research, and do not write an undergraduate thesis. Having AU undergraduates write an undergraduate thesis would be an improvement for the program. However, AU undergraduates often have a different exposure to research compared to AAP students at CTU. AU students are often employed to assist with research projects, and in some ways exposed to innovative research in a different way compared to CTU students, but do not receive the scientific writing experience.

During the presentations and oral exam, I was impressed with the adherence to English, and no slippage into Vietnamese while conducting these exams, which would be quite tempting when the student and the professor have trouble understanding each other. I am also impressed with the student's improvement in English during the past 3-4 years.

Recommendations, additional observations

Option 1- Since this program has been highly successful; one option would be to continue as is with slight modification.

Improvements-

English and Recruitment- The students that perform best on my exams, had the best theses and the best presentations spoke the best English. There are two interpretations—the most intelligent students have the best ability to learn English, Fish Genetics or any other subject. The alternative

interpretation is that the intelligence is similar among the students, but the ones that have learned the most English now have the ability to learn other subjects in English more effectively. The CTU faculty that discussed this with me felt that the former explanation is the correct one. The best students learn English and the other subjects more effectively. The CTU faculty indicated that there is a problem with recruiting qualified students that have English ability. One solution would be more emphasis on improving English at the Language Center. A long term solution is more teaching of English at the secondary schools and improvement in elementary and secondary education. How CTU can be involved in this and help with this problem, I am not sure.

One solution may be to identify the best candidate students one year earlier than done now, and initiate the English training one year earlier. AU is involved with introducing aquaculture to high school students. Maybe recruitment would be made better by CTU introducing aquaculture to high school students, and then intensifying English for the best students with interest in aquaculture.

Although, it is commendable that this program is primarily conducted in English, some Vietnamese translation is beneficial. Sometimes during lecture, the best students are asked questions by nearby students and the best students quietly explain the concept in Vietnamese. I pause and let them provide explanation, and this surely increases understanding.

Only rarely does CTU faculty attend my lectures. I understand this as they have busy schedules and if the roles were reversed and they were teaching at Auburn, I would have difficulty finding time to spend with them. However, when the CTU faculty does attend the lecture, we usually allow some time for explanation in Vietnamese if the students have a question. This seems to be helpful.

The AAP students might do a better job of learning with occasional help sessions in Vietnamese. Actually, today Dr. Yen discussed this with the students, and we are implementing this in preparation for their final exam. Also, Dr. Yen has noticed that the students take poor notes. Either they do not know English well enough to take good notes, or they do not really understand how to take notes, or we are too soft on their examinations making them think they can get by with sloppy note taking.

Presentations and theses

Everyone used a slide indicating that they would have introduction, methods, results and conclusion in their presentation---- this is not necessary, as any good presentation would have these components. Examiners wasted a lot of time pointing out errors in the theses. This is important, but could be provided in written format or orally by meeting individually with the students. This would allow more time for questions, and oral evaluation of the students' knowledge, ability to think and ability to answer oral questions. This would also expose them to a format and more practice in answering questions that they might experience in an international graduate level defense or what they might experience from an audience at a scientific meeting.

One consistent problem in the theses is inadequate captions for Tables and Figures and not explaining statistics properly in the figures. Some of the committees seem to not like too many references. I disagree, the more references the better as long as they are relevant. I was told that the reason behind encouraging fewer references is that the students are copying references from other papers without ever reading them. Of course the ideal solution is to use a lot of references, and ideally and minimally at least read the abstract.

Students are very good at following directions, producing good data and collecting good data.....but in general, they have trouble truly understanding their results and thinking about them and what they mean in the real world. *I am not sure how to correct this, however, perhaps faculty could spend more time explaining the purposes of their projects and the implications.*

Some students have excellent data sets, but do not apply any statistics. Dr. Phuong says they will address this situation by having an AIT statistician develop a basic statistics course for the students.

AU or AIT could provide simplified and basic statistics early in the AAP program

If CTU wants to increase its international standards and relevancy then Molecular Biotechnology/Genetics/Genomics should be added to the program. This could be taught by Dunham, but Eric Peatman would be better qualified.

The AAP graduates should be tracked so the AAP impact can be measured.

A similar cooperation between AU and CTU could be conducted at the graduate level

If funding were available, joint research could be added to the program.

CTU defenses

1/16/2013

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Examiners provided challenging questions in an aggressive manner. Students did a good job of maintaining composure, especially since they were so young and the professors sometimes quite stern. Everyone used the slide indicating that they would have intro, methods, results, conclusion in their presentation---- this is not necessary, as any good presentation would have these components. Students did an OK job of answering questions, but were not outstanding in this regards. I had some problems evaluating the dialogue between the students and the professors because of the Vietnamese accents and the echo (poor acoustics) in the examining room. I am impressed with the adherence to English, and no slippage into Vietnamese while conducting these exams, which would be quite tempting when the student and the professor have trouble understanding each other.

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Recommendations by the students in their conclusions are always general, but not specific at all.

Students were very professional in their attire.

Effect of pellet feed on feed utilization, survival, and growth of Knife fish (*Chitala chitala*)-Vo Thi Y Thu

Not in the presentation-What statistical method did you use? Ad-libitum or % body weight feeding? Costs?? Production? How about flavor?

Results---Feeding marine fish was by far the best-growth , survival , FCR (control diet had much more protein and lipids), the control fish also had higher protein and lipid

Excellent presentation- good delivery-good visual aids, acceptable for MS level presentation

Discussion focused on the thesis for which I did not have a copy.

Student had a lot of difficulty answering the questions.

Effect of vitamin C and probiotics supplemented in pellet feed on growth and survival rate of Cobia (*Rachycentron canadum*) Dang Dien Tuong

Another high quality presentation- Did a better job of answering questions.

Nitrite was higher in control

Experiment was too short, she showed trends, but no differences in growth. Alternative statistical analysis should be used. Probiotics reduced individual variation. Increased survival.

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No differences found in the experiment. Seemed confident in his answers.

Assessment of ASC certification application for catfish (*Pangasianodon hypophthalmus*) farmers in Can Tho City Nguyen Thanh Toan

Dutch certifications.

What problems does Tra farming cause for the local community?

Approximately, 50% of farmers are certified?

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What is the difference between standard and normal hatchery.

Ton /ha 350 700,000 lbs./ha

Units on table are not clear

Lot of information, but not explained well

Farmers lose money, companies make money

English is poor in this presentation. Many spelling errors. Impressive amount of data.

I read part of the thesis for Truong Thanh Lam and it appears to be of high quality

CTU defenses

Overall observations 2nd day 1/17/2013

I examined several theses today. In general, they are of good quality. One consistent problem is inadequate captions for Tables and Figures and not explaining statistics properly in the figures. English and acoustics were better today. It was much easier to understand. The committee members did a better job of focusing questions today, especially in the morning.

Overall observations 4th day 1/19/2013

Committee is doing a good job of questioning initially, and then slipped back into wasting time telling the student how to correct the thesis. Now I am bored to tears, the committee insists on orally correcting all of the mistakes in the thesis, when they could do this by giving the students written comments or orally in individual sessions. Difficulty in hearing the committee, they are too soft spoken. Some of the committees seem to not like too many references. I disagree, the more references the better as long as they are relevant. Phuong explained that the reason behind encouraging fewer references is that the students are copying references from other papers without ever reading them. Of course the ideal solution is to use a lot of references, and ideally and minimally at least read the abstract. Students are very good at following directions, producing good data and collecting good data.....but in general, they have trouble truly understanding their results and thinking about them and what they mean in the real world. Some students have excellent data sets, but do not apply any statistics. Phuong says they will address this situation by having an AIT statistician develop a basic statistics course for the students.

4th day 1/19/2013

Florfenicol and enrofloxacin resistance in heterotrophic bacteria isolated from snake head fish, *Channa striatus* and climbing perch, *Anabas testudineus*, farms in the Mekong River Delta. Nguyen Dai Duong

Slides were high quality. Good delivery. Had specific recommendations. Below average ability to answer the questions

Identification and antibiotic sensitivity of *Vibrio* bacteria isolated from shrimp with acute hepatopancreatic necrosis syndrome. Quang Trong Phat

Delivery was good, slides were good, recommendations were OK, nice conclusion slide. Above average ability to answer questions.

Studies on fungal infection in striped catfish (*Pangasianodon hypophthalmus*) in grow-out stage

Ngo Thi Mong Trinh

Nice delivery, GREAT slides , Needs spelling check, grammar problems, salt does not stop this fungus, but it does not like 20C and will not grow at 35C, she is very confident but again has some trouble with questions, nice appendix

Studies on fungal infection in striped catfish (*Pangasianodon hypophthalmus*) in hatchery stage
Le Duc Anh

average delivery, GREAT slides , very original as he used a video!!!! Needs spelling check, grammar problems, salt did stop this fungus in contrast to previous presentation, but it does not like 20C or 40 C , nice appendix

Florfenicol and enrofloxacin resistance in heterotrophic bacteria isolated from striped catfish farms in the Mekong River Delta. Dinh Viet Minh Nhat

Good slides, average presentation. Recommendations were actually a statement of facts. Great difficulty in answering questions.

2nd day 1/17/2013

Effects of enrofloxacin and cirploxacin on non-target aquatic organisms: algae (*Chlorella* sp) and invertebrate (*Moina* sp) Nguyen Le Nhat Khoa

Excellent presentation, excellent delivery and English, first student to give specific rather than general recommendations. Some difficulty with thinking about the questions, but really not much different than the problems experienced by some AU graduate students regarding thinking and reacting to questions. A common problem in the younger generation is that they can memorize, but have trouble thinking through solutions when a quick answer is needed in an oral exam.

Study on the efficacy of vitamin C on stress reduction of *Pangasianodon hypophthalmus* catfish under transportation condition Lam Tien Mai

Delivery was poor because she read directly from her slides.

Feeding vitamin C 2 weeks prior to transport reduced various stress indicators compared to control during transportation.

Figs. Are too complicated, make more figs. That are simpler and easier to read.

Her recommendations showed more thought than the other students.

Study on the changes of plasma cortisol, glucose and hematological parameters of *Pangasianodon hypophthalmus* catfish under practical transportation conditions

Scientific names should either be italicized or underlined.

5.1 ha grow 1 million tonnes

2 cops per year so 700 tonnes / ha

Production is correlated with depth and volume not surface area, and water parameters

She made recommendations without data, but she did a great job of presenting. She was very confident, and stood up to the committee without being arrogant. She did a good job of answering questions. I am more and more impressed, as the questioning goes on, she does a good job of quick thinking and answering.

Risk assessment for the residues of common pesticides in aquatic products Vo Hung Vuong

30-40% of fish on farms had pesticide residues but somehow went to 0% when it made it to the market. 26% of Vietnamese have no knowledge that pesticides are harmful.

Vietnamese eat 2kg of fish per week. This thesis is more poorly written, the sentence structure is poor. Theoretically, they are consuming .01 mg/day. Relatively , good job of answering questions.

Application and hazards of probiotic, disinfectant and antimicrobial usage in the striped catfish (*Pangasiandon hypophthalmus*) Cultured in the Mekong Delta, Viet Nam Huynh Phuoc Vinh

12 antibiotics used on farms. Well organized thesis. No statistical analysis. Good job on conclusions and recommendations. Major finding- withdrawal period needs to longer for antibiotics before going to market.

Effects of steroid on artificial propagation of striped catfish (*Pangasiandon hypophthalmus*) Nguyen Minh Linl 17 alphah 20 beta dihydroxy-4- pregne-3

Hcg is control repeated injections was much better than the combination of hcg and 17.2 P and pituitary gland.

Use pituitary gland and HCG and then 17.2 P as resolving did not work

Hcg amd 17.2 as both priming and resolving, was similar but about half as effective as HCG alone, no statistical analysis

400,000 eggs/kg

Slide quality was not as good as others; went over some slides too fast, delivery was poor. **THIS IS THE WORST STUDENT IN THE GROUP. Not a good thinker at all. Unable to answer the questions.**

Improving survival rate of striped catfish (*Pangasiandon hypophthalmus*) fingerlings by adding rotifer and actigen Nguyen Thi Phi

Survival rate of fry is less than 30% ususally

Actigen increased survival and growth.

Excellent delivery and style, slides are good but not great, recommendations are OK, ability to answer questions was average.

Comparing and optimizing DNA extraction protocols for fish and shrimp samples Nguyen Thi Mai

Delivery is average. Conclusions are poor. Slides are average to good. Nice study. Too timid, and afraid, having difficulty answering questions. Placing finger in her mouth like a child, not professional because of fear, almost ready to cry.

Comparison of cytochrome oxidase subunit I Gene between two strains of climbing perch (*Anabas testudineus* Bloch, 1792) Pham Hoang Yen

Nice delivery. Nice data, slides are Ok. However, data is insufficient to support the conclusions. Great difficulty with questions. She can cook book and do nice work when told what to do and can deliver a nice presentation, but she really does not understand what she is doing.

Study on reproductive biology of suckermouth catfish, *Hypostomus* sp. distributed in Cantho. Nguyen Quoc Trang

Slides are inconsistent in quality. Pictures are good, but print is awful. Some difficulty with answering questions.

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Can tho, January 17th, 2013

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Professor Rex Dunham