

Undergraduate Research Project Proposal
Geomatics Department
School of Engineering

An Evaluation of Undergraduate Surveying Education In Alaska

2. Abstract:

An Associate Applied Sciences Degree in Surveying and Mapping was introduced at the University of Alaska in 1971 and a four year Bachelor of Science Degree in Surveying and Mapping was added in 1991. These programmes were changed to an Associate Applied Science degree in Geomatics and a Bachelor of Science Degree in Geomatics in 1996 and a Certificate in Geographic Information Systems added in 2001. Since the introduction of the Geomatics offerings in 1996 there have been 375 declared majors in Geomatics but only 18% of the declared majors have successfully completed the program. The programs currently being offered are accredited by the Accreditation Board for Engineering and Technology (ABET) and are essential for students wishing to enter the profession of land surveying in the state of Alaska. There is currently a shortage of Professional Land Surveyors in the state of Alaska and the average age of the Professional Land Surveyor in Alaska is 58 years. Unless the retention and completion of the Geomatics programs can be improved there is likely to be a severe shortage of qualified land surveyors which will impede development and growth within the state.

This research seeks to determine the reasons for the low retention and completion rates and to suggest changes to the program that might bring about an improvement in the rates, so the needs of the geospatial sciences industry in Alaska can be met to facilitate the growth in this sector of the economy.

3. Introduction

There is no previous research in to this area within the state of Alaska. Although various statistics exist with regard the number of Professional Surveyors currently licensed in Alaska, it appears that few are a product of the University of Alaska programmes that have now been running, in one form or another, for thirty five years.

We hope to answer a number of questions with the research but the principal questions are;

1. Why do so few enrolled students complete the programme?
2. How many AAS, BSc and CGIS graduates are needed in the Alaska geospatial sciences industry in the short, medium and long term?
3. How can the retention and completion rates be improved?
4. What changes are needed in the programs to achieve the improvements in the rates?

There is a global shortage of land surveyors and many universities around the world are finding it difficult to attract students into the land surveying programs despite the fact that employment prospects and remuneration are high for students who complete the programs.

Alaska is unique in that it seems to have no problem with recruitment as such; year-on-year enrolments are increasing but few are staying to complete the 4 year BSc in Geomatics program or even the CGIS program and those that leave prematurely are able to find work in the industry with the skills and knowledge they have acquired after completing less than half of the required credits for graduation.

On the face of it this might not appear to be a problem but the requirements for licensure are an AAS degree or a BSc degree with varying levels of professional experience and in some states only a four year degree is accepted for licensure. This means that with the premature departure of the students, the work in the industry is being carried out by people who will find it difficult if not impossible to get licensed unless they return to university to complete their studies.

The issue is further compounded by the newly introduced requirement for professional land surveyors to maintain their continuing professional development by taking continuing education units each year.

The researchers do not view this purely as a problem but more of a challenge to UAA to provide the means for students to remain in employment whilst continuing with their education. It is therefore felt that the way forward is to introduce a flexible and distance learning approach to the delivery of the Geomatics courses currently on offer.

It is believed such an approach will not only improve the retention and completion rates of all programs being offered but will also provide opportunities for professional land surveyors to get access to continuing education units that are required for them to maintain their licensure.

4. Experimental/Project Design

The Department of Geomatics maintain a database of all students enrolling as geomatics majors and they use this to track the progress of the students as part of the ABET accreditation process. The researchers will also have access to this database and also the membership databases of the Alaska Society of Professional Lands Surveyors (ASPLS) and the Alaska State Board of Registration of Architects, Engineers and Land Surveyors (AELS).

The researchers will compile a questionnaire which will be distributed to all members of the above databases by regular mail in the first instance. The researchers will also interview as many people as possible to obtain as much information as possible regarding non-completion of the geomatics program and to request information on what changes might induce the people to return to their studies.

Unfortunately the timing of this research means that there will be no annual gathering of surveyors and GIS practitioners before the preliminary results are expected to be presented in February 2008. The research is important for the development and growth in Alaska so it is anticipated that the research will continue next academic year.

The researchers hope to gain enough information from this pilot study to refine the method of surveying all the stakeholders in time for the Alaska Surveying and Mapping Conference being held in Anchorage in February 2008.

The results of the initial survey will be analysed and reported using the statistical features of Microsoft Office Excel and PowerPoint software.

5. Anticipated Results

It is anticipated that there will be problems with disseminating the questionnaires and conducting the interviews and this may result in the sample being small and possibly biased in some way. Therefore this initial attempt is viewed as a pilot study. With the information received from this pilot study it hoped, with the aid of modest funding, to prepare a more appropriate method of survey of alumni, employers and professionals involved in the geospatial industry in Alaska. It is essential that the research covers the history of the surveying profession in Alaska and the development of formal education courses and the impact that they have had on the numbers of people entering the profession.

It is believed that whilst the course have had some impact with almost 400 declared majors in surveying and geomatics over the last 30 years the actual number of graduates is disappointing and it seems the preferred way of becoming licensed in Alaska is the experiential route. This puts Alaska as one of the few states that does not require a degree to become licensed and would mean that Alaska surveyors would not be able to get licensed in other states without first completing a 2 year degree and in many states a 4 year degree.

It is thought that the low retention and completion rates are not related to costs of education or the fact that the students decide that surveying is not for them because many seek employment in the profession when they leave the program prematurely. The retention rates in the profession are higher than the retention rates at UAA but those that remain in the profession find their progress hindered by a lack of a degree education and seek ways of returning to full or part time education to satisfy their desire for progress in the profession. The research hopes to find out how this can best be achieved.

The preliminary findings of the pilot study are to be presented at the 42nd Annual Alaska Surveying and Mapping Conference being held at the Sheraton Hotel in Anchorage 25th-29th February 2008. The theme of the conference is “Alaska’s People – Alaska’s Land – Geospatial Resources.”

The research is considered important by the ASPLS and the AELS and the students have been given a one hour, prime slot, at 11:00 a.m. on Thursday 28th February 2008 to present to the anticipated 500+ conference delegates. This is invaluable experience for our students and is in fact a “first” in the 42 year history of the Annual Alaska Mapping Conference.

Attendance and presentation at the conference provides the opportunity to interview what is essentially a captive audience and it is from this that the students hope to get the most useful information so that they can continue with their research and present their final results in 2009 at the 43rd Annual Alaska Surveying and Mapping Conference that will most likely be held in Fairbanks.

This is not theoretical research, although the students will gain experience in research methods, it is a genuine attempt by the students to determine the status of the profession they have elected to join and to see what they can do to improve recruitment and retention of Alaskan students in

order to satisfy the needs of Alaska in the new millennium. Students are encouraged to take an active role in the stewardship of their profession.

6. Project Budget

The anticipated costs associated with this research project are modest and almost exclusively related to acquiring the data; travel to interviews; telephone costs for interviews; preparation of and mailing out a written questionnaire and attendance at the conference next year. Because of the amount of work involved 4 students will be involved in the project and 4 students have expressed a desire to attend and present at next year's conference. Fortunately there are no travel costs associated with their attendance although there may be a conference registration fee.

Preliminary Budget

4 x Voice Recorders + batteries	\$200
1 x mail shot 600 people	\$600
1 x questionnaire print runs	\$200
4 x Conference registrations	\$500
Total	\$1500

7. Project References

1. Barry, M. and Whittal, J. *The Geomatics Curriculum at the University of Cape Town: A Model for Developing Countries*. FIG Working Week 2003, Paris, France. April 13-17, 2003.
2. Curley, R. and Boydell, S. *The Regulation, Registration, and Representation of Surveyors in the Pacific Islands Countries* TS3.3 3rd FIG Regional Conference for Asia and the Pacific – Surveying the Future – Contributions to Economic, Environmental and Social Development. Jakarta, Indonesia 3-7 October 2004
3. Dowling, D. and Taylor, R. *Distance Education for New Zealand Technician Surveyors: A Review of the Options*. 4th Trans Tasman Surveyors Conference, Auckland, New Zealand, 13-16 October 2004.
4. Frank, S. *The Status of the Four-Year Surveying Degree Towards Professional Registration*. 16th North American Surveying & Mapping Educators Conference. New Mexico State University, Las Cruces, New Mexico. 9th-11 June 1997.
5. Ghilani, C.D. *Using Technology to Reach out to Professionals* XVIth North American Surveying and Mapping Educators Conference, Las Cruces, New Mexico, June 10, 1997.
6. Ghilani, C.D. *The Penn State Surveying Program: 2001 Status Report*.
7. Hannah, J. *Changing Circumstances bring about a changing Curriculum*.
8. KDD Engineering and Consulting, Inc. (KEC), *Distance Education System via Satellite Communication Network in the South Pacific – USPNet*. [http:// www.itu.int/ITU-D](http://www.itu.int/ITU-D)
9. LaChapelle, G., *A 21st Century Geomatics Engineering Curriculum*. 16th North American Surveying & Mapping Educators Conference. New Mexico State University, Las Cruces, New Mexico. 9th-11 June 1997.
10. Matyukira, C. *Curriculum Development of Surveying and Geomatics Program in Zimbabwe*. Proceedings of the 21st International Cartographic Conference (ICC), Durban, South Africa, 10-16 August 2003.
11. Prasad, A. *Surveying Challenges in the Fiji Islands* TS27.3 FIG Working Week 2003, Paris France, April 13-17, 2003.
12. Stoughton, H.W. *Surveying Education – Distance Learning* 21st North American Surveying & Mapping Educators Conference. Ferris State University, Big Rapids, Michigan. 11th-13th July 2007.
13. Tsao, Hsin-Ho. *Learning without Boundary. Application of Satellite Communication System on Distance Education*. Online Journal of Space Communication, 2002.
14. Whittal, J.; White, A.; Whitmill, P. *Computer Aided Learning in Geomatics – An Initial Study for Southern Africa use*. Department of Geomatics, Faculty of Engineering and the Built Environment, University of Cape Town email: jwhittal@engfac.uct.ac.za