DISTANCE LEARNING AND LONG DURATION LUNAR MISSIONS ASSISTING MENTAL HEALTH OF ASTRONAUTS. A. A. Mardon[1], [1]Antarctic Institute of Canada (Post Office Box 1223, Station Main, Edmonton, Alberta, Canada T5B 2W4, aamardon@yahoo.ca).

Introduction: Time to think. Time to wonder why one is out between the planets and on other planets might bear on the soul of those selected for the multi year flight to and from Mars and Lunar missions. The presenter proposes that established distance learning techniques be used to bolster the psyche of those Astronauts by giving them a goal something interesting to do with their time along with their duties related to ships maintenance and personal fitness preservation. How many of us have said that if I only had the time I might study something from a field that we did not specialize in but were interested such as archaeology, modern and ancient history. Another idea is to cross train astronauts in the time that they are in flight to Mars or are on long duration missions on the Moon in a secondary field that is necessary to the mission. An example of this would be a pilot learning from online curriculum and from the ships doctor basic first aid. And vis-a-versa for the ships doctor learning basic piloting skills through online curriculum and personal computer simulators and eventual on deck awareness. This would allow the mission a certain amount of redundancy and if casualties or death were to occur the mission might not be totally compromised.

Many of the astronauts have A personalities and as such are driven individuals that are very goal orientated. Giving them tailored online curriculum could artificially dampen that into what might become more mentally productive ways. Many of them will also likely be very intelligent and some might even be polymaths which would use that time in productive ways. One of two courses for the type of distance learning could be done. They are synchronous and asynchronous learning. Synchronous learning is where all of the students and faculty for the course interact with each other at the same time. Students are in an electronic classroom at the same time like a traditional classroom in a college. Asynchronous learning is where the students and faculty do not interact with each other necessarily at the same time but can leave notes and messages for each other. Each with their own potential advantages and disadvantages. Obviously asynchronous learning would have to occur being that the distances involved eventually would prevent simultaneous communication necessitating delayed asynchronous teaching techniques. But the two ways are first an individually tailored individual class with an instructor on Earth or several instructors which would involve time delayed voice and delayed text communication. The other way would be the enrollment in existing or created online class's asynchronous of course with other students and other faculty members enrolled on Earth. This might not necessarily be as useful in terms of data acquisition but might have real social benefits engaging the astronaut in an online classroom environment similar to Earth where with Asynchronous learning the students can be all over the planet in different time zones and communicate by email. Tests would be administered and marks given. This might be more suited for the type of program that I first mentioned where the astronaut student is learning a filed that he was never able to study in depth. It might even be that the learning styles or goals on the outward and inward legs of the journey would not be the same. For the outward first leg of the trip mission redundancy curriculum and cross training might be focused on and on the inward return leg of the mission more individually directed forms of learning would occur. Studies would have to be done to discover the balancing of learning cross skills versus any positive effects of learning. The presenter does not have any ideas on of the balance between these two potential educational needs. It would also potentially generate positive publicity for the mission and the crew. Many mainstream universities employ elements first seen in distance and online education. Just last year I had an editor of one of my books question the validity of a citation because it was not on the internet. I pointed out that I got it from a book that predated the internet and that it was a valid citation. Being a far distance from Earth learning would in many ways be no different from learning in an isolated lab in the Antarctic or online learning in some remote location on the Earth. Also advanced training in their specific area could occur using online learning. It has been estimated that in a few years the difference between online learning and traditional bricks and mortar learning will become blurred. The only thing that generally is lacking in online education is in person social interaction. In our wired world people interact socially through electronic media. The learning experience in some ways is becoming no different.

Asynchronous learning which is learning by those that are not in the electronic classroom at the same time is most suited for this specific learning environment. Test-bed learning could be developed for use on the space station to see psychological and impacts on absorption of curriculum in the unique environment of space. With the long duration of astronauts in orbit it would be a good test bed for positive psychological aspects of different types of learning styles. Asynchronous learning could be tested.

Conclusion: Another ideal test bed for educational programs could be over-wintering personnel in Antarctica by various nations including those at Amundsen-Scott South Pole Station. Various online courses for general undergraduate and graduate study are given to military personnel all over the world. For example the university that I associated with has students from all over the world I communicate with my students and administrators through the internet and the occasional phone call. It is quite similar except for the social aspects to a conventional bricks and mortar university doctorate.

Research Support: This research was supported by the Antarctic Institute of Canada.