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How Relevant is Rewi Alley's Educational Philosophy in the Digital Age?

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Abstract

Over the past few decades digital technology has advanced extremely rapidly making the acquisition and communication of knowledge vastly different from the time when Rewi Alley formulated his ideas on education. In the applied sciences particularly, teachers and students must find ways to deal with the overload of information. They can do this by understanding the broad concepts within a subject, prioritising information according to its value and working with others who have specialist knowledge towards a common goal; all of which are aspects of Rewi's philosophy. Technological changes often place demands on institutions designed for an earlier time and Rewi recognised the need for institutions to adapt to new conditions and opportunities. The need for innovation in all educational systems was an important facet of Rewi's thinking and acquiring and reinforcing knowledge through problem solving is a valuable method of increasing a student's depth of understanding. Globally humankind is currently faced with major challenges including extreme climatic events, loss of biodiversity and resources which will put severe limits on economic growth. Rampant consumerism and growth at any cost with its destruction of the environment is no longer sustainable and we must therefore embrace Rewi's spirit of internationalism by fostering the human qualities of collaboration, understanding of other cultures, innovation, and connectiveness with the environment to have a sustainable future.

Introduction

When Rewi Alley first arrived in China nearly 90 years ago, he was confronted by the enormous problems of foreign exploitation and invasion that China had to endure during those dreadful times. In the midst of the turbulence however, Rewi saw the hope of a new China emerging and with the help of Chinese and International friends, Gong He was created. The Gong He movement with its internationalist links was instrumental in defeating the Japanese invasion and laying the foundations for China's future rural and industrial development. Its legacy still remains firmly embedded in Chinese rural business management in many parts of China.

At the same time Rewi also saw the need for new directions in education and with his friends Joseph Bailie and George Hogg he began "at the grassroots" working with children from deprived backgrounds and transforming them into valuable workers and leaders in China's new society. Because Rewi came from a family of educationalists it is not surprising that he developed a strong interest in both educational theory and practice. Although his ideas were well ahead of their time, the last 50 years have seen major changes in the variety and quantity of knowledge and how it is acquired and communicated worldwide. It is therefore timely to re-examine some of Rewi's ideas about education and see what relevance they may have to issues emerging in the digital age.

Information Overload

In the early Baillie schools Rewi had to make do with a few battered textbooks from which he made notes for students to print out on their school-made paper (Alley 1959). In recent times, electronic access to knowledge has expanded so fast that teachers in most professions must now accept the impossibility of teaching all the factual information required for their students to satisfactorily perform their professional duties and should guard against striving to do so (Grande 2009; Harden 2001). This is particularly true of the applied sciences where researchers across various disciplines have found that the performance of a student correlates positively with the amount of information he or she receives only up to a certain point but after this point their performance will rapidly decline (Eppler and Mengis, 2004). The burden of a heavy information load will then confuse the individual, affect his or her ability to set priorities, and make prior information harder to recall (Schick et al., 1990).

Prioritising information according to its importance of is therefore essential in successful learning. This can only be achieved if the student has a broad practical knowledge of the subject and can see the value of the facts and ideas in a holistic context. Rewi was well aware of this and sought to make sure his students knew that within any subject area there are basic concepts that must be understood and these can become building blocks for a sound practical knowledge. He was also aware of the need to integrate knowledge in one area with that in other disciplines.

With so much information now available delegating tasks and responsibilities to those with the necessary specialist expertise is also an essential practice in project management in the 21st century. This will not only require cooperation and recognition of shared goals but also an understanding of the limitations of the knowledge and skills already available. As the Baillie schools expanded in the 1950's the need for specialist technical expertise became apparent and Rewi drew on the technical skills of retired villagers, foreign experts and experts from cities such as Shanghai who were willing to assist in rural areas (Alley 1959). In this way projects became collaborative learning experiences and the shared expertise allowed many students to have ownership of the projects and take pride in their success.

Changing Careers and Professions

In the 20th Century, up-to-date skills usually provided career success but in the digital age much of our acquired knowledge and skills as well as the occupations associated with them may rapidly become obsolete. The need for retraining in the face of changing job opportunities was recognised by Rewi in Shandan during the 1950's when he wrote " As modern industry changes, a specialist in one thing may be called upon to be a specialist in something quite different as one process supplants another" (Alley 1959). Underlying this however, is his basic philosophy of the need for a broad practical experience on which to base the new knowledge and skills required and to assess their value and relevance to the new situation.

With new digital technology comes the need not only for new jobs but also new organisations. However, old organizations do not disappear easily and, furthermore, they may not change rapidly either. We may get short periods of transition between longer periods of stability. The picture we get of social change in terms of relations between old and new organizations is a picture of an uneven social change that sometimes may be difficult to detect. And it is not a social change that

happens in shorter periods of transition between longer periods of stability. Instead, it is a social change that happens in parallel processes of change and stability in the social landscape. Everything does not change at once and at the same time. Some things may change dramatically while other nearby social processes may go on as usual during long periods of time (Ahrne and Papakostas, 2001).

In China, this is illustrated in my own field of animal biosecurity and disease management, where new molecular technologies have allowed the fast and inexpensive detection of organisms and contaminants in animal products. The development of this technology has been driven by increased consumer demand for safe food products both locally and internationally. However, institutional change to interpret and regulate food safety requirements has been slow to occur and there have been numerous national and local government departments in China which shared responsibility for food safety. There were also numerous provincial agencies which monitored production and sales resulting in a complex, overlapping and ambiguous administration. The reforms of 2009 placed all food safety activities down to township level under the control of the Ministry of Agriculture. But there was still limited enforcement in rural areas and local veterinary administrators were not well supported financially and still engaged in cost recovery and profit making activities. It was not until after the melamine scandal of 2013 that the Chinese Government revised food safety laws, improved food tracking and increased the training of food inspectors (Wei et al., 2015).

Although he disliked bureaucracy, Rewi accepted the need for organisational change when the situation and environment made it necessary. Thus in 1953 when his beloved Shandan Baillie School was moved to Lanzhou to become the Bailie Oil School, Rewi realised that new technology and high level training was necessary and from this move, the modern Lanzhou City University has evolved which I am happy to see, still incorporates his educational philosophy.

Problem Solving as an Educational Tool

Student participation in an active learning process was a central concept in Rewi's educational philosophy right from the earliest days in Shaungshipu when staff shortages meant that senior students had to take responsibility for group learning (Alley, 1976). To become fully engaged in the learning process requires consistent positive emotional experiences, with emotion, motivation and cognition being strongly interrelated (Meyer and Turner 2006). Students' behaviour with regard to learning is influenced by their emotional response to the task at hand (Seifert 2004). Currently, most believe that rote learning is the best way to master the work they have to know for assessment. Lujan and DiCarlo (2006) stated that the curriculum is packed with so much content that, to "cover the content" ... students simply commit facts to memory. Consequently, when students experience a combination of content overload and believing that rote learning is better to commit knowledge to memory, surface learning is inevitable. The perceived volume of subject content may cause anxiety, and many students cannot establish an appropriate depth of knowledge (Mattick and Knight 2007).

When organising many of the Gong He cooperatives during the late 1930's Rewi discovered a large disconnect between many of the managers (promoters) and the workers/technicians. The managers were often middle school or college graduates appointed by the Kuomintang who had little knowledge of day to day practical problems. As a result, workers became disillusioned and many cooperatives collapsed. Those that did best had leaders that were democratically supported and fully committed to solving local problems and improving working conditions (Alley, 1989).

In many professions it is essential to have a solid scientific underpinning to practise and this cannot be achieved simply by factual recall. In a recent Australian teaching experiment done on learning in the biological sciences, Watters and Watters (2007) found that those students with a deeper approach to learning were more likely to achieve highly on overall assessment of the subject than those learning simply by memorisation. A deep understanding requires that new knowledge be integrated with other ideas and concepts to predict real outcomes. If approaches to learning are superficial in nature then the student's prime goals in participating in the course are to simply pass examinations. The emphasis should instead be on how students can make use of the information that they have acquired.

However, project-based learning, will challenge the existing capabilities of teachers. These approaches are widely recognized as demanding because they involve, for example, changes in classroom management strategies, the organization of knowledge, and in assessment. Coupled to this are the demands that inquiry-oriented teaching place upon teachers' subject-matter knowledge, which must be deeper and broader than in traditional recitation teaching in order to accommodate students' questions and investigations (Fishman et al., 2003).

At Massey University, problem-based learning was introduced into the 4th year Veterinary Science curriculum in 2013. Generally the experience of teachers has been positive and students find their classes more enjoyable as they can now see the relevance of their knowledge. Never-the-less, a firm foundation of knowledge in the core disciplines is essential as students do not know what they don't know. Reinforcement of the knowledge from previous years can be time consuming for staff as students require this to solve real life problems. Providing adequate resources for this type of learning has been expensive and challenging and there is a need for international collaboration between institutes to provide good resources for this type of teaching.

At Shandan in 1951, Rewi recognised the value of problem-based learning and wrote: " Every day there are little problems for the students to solve. This will broaden their interests and increase their depth of understanding. It will also allow them to find topics in which they will be really able to specialise later." (Alley, 1959). He believed that a school should be a place where students should be able to learn by making mistakes. When problems to solve were not immediately available Rewi asked teachers to set up practical exercises (eg. electrical wiring boards containing errors for students to locate and correct). Today computer models of simulated problems have been created in many fields and although these are useful learning tools they can never fully replace "hands on" experiences of the real situation.

Facing Today's Major Global Issues

The major issues facing humanity in this century are climate change, loss of biodiversity, decreasing and unequal distribution of natural resources and overpopulation. As these are global problems they will require international goodwill, collaboration and the sharing of knowledge in order to find effective solutions. China has already made great advances in the use of renewable energy, reducing over population and addressing economic inequalities in rural areas. However, much more needs to be done and we are already seeing the effects of extreme weather events and rising sea levels in many countries throughout the world. The development of the "One Belt One Road" policy will not only provide economic benefits but will also provide an opportunity to promote sustainable technologies in the field of agricultural and industry in the middle eastern and southern Asian

countries. Such a development would be entirely in keeping with Rewi Alley's internationalist spirit and the urgent need to promote a safe and peaceful environment for the children and grandchildren of all ethnicities to enjoy.

Rewi's early experiences while attempting to farm highly erosion prone New Zealand hill country and then dealing with devastating floods in Hunan and elsewhere, made him very aware of environmental issues. He was also strongly influenced by Joseph Baillie who understood the importance of restoring China's forests (Alley, 1997). Working in Gansu and seeing the expansion of the Gobi desert gave him further cause for concern hence his desire to name the new Shandan Baillie School a "School of Agriculture and Forestry". The need for sustainability, eliminating waste, conserving and recycling resources was central to the workings of the early Shandan School where many resources were in short supply (Alley, 1959).

Jackson (2009) has pointed out that as important global resources such as oil diminish, the amount of energy required to extract those remaining increases dramatically. This must inevitably result in fewer resources available within a society for health, education and other social needs leading to increased inequalities and destabilisation of the society. In a similar way the resources required to mitigate the extreme weather events, rising sea levels etc. that result from climate change will rapidly become greater than the costs of reducing carbon emissions beforehand. To stay within our carbon limits and maintain biodiversity in the face of climate change we must now rely on new technology which does not yet exist and thus the need for innovation will be a vital part of a sustainable future.

The digital age has brought to us an opportunity to greatly increase our knowledge and improve the speed and quantity of our communications. However, we must remember that it may not necessarily broaden our understanding of the major problems of the real world. Online education is by nature individualistic and does not encourage the development of social skills and cooperation that are the essential basis for Rewi's internationalist spirit.

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