

Opportunities and Challenges of Measurement Of Knowledge Development and Management: The Use of Emergency Telecommunications As an Educational Theme

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ABSTRACT

Measurement of knowledge development and management could be gleaned from examples in education. The use of “educational” or “learning” themes in education is one of the effective pedagogical methods. In this paper, “emergency telecommunications” has been proposed as an educational theme in secondary and tertiary education. The use of emergency telecommunications as an educational theme brings about challenges to traditional educational measurement. On the other hand, it also provides opportunities for experimentation of new educational measurement methods. As such, it is worthwhile to delve into its effective and practical educational measurement.

Keywords

Knowledge development and management, educational theme, emergency telecommunications, educational measurement

1.0 INTRODUCTION

Knowledge is a *shared* collection of principles, facts, skills and rules (Pemberton and Stonehouse, 1999). One of the more traditional processes of sharing these items is education. As such, a conceptual discussion of measurement in knowledge development and management could perhaps be best illustrated by borrowing an example from education. By necessity, education in developing countries often emphasises practical applications. This is due to the fact that in contrast to developed countries, the main aims of

education in developing countries are to equip students with the necessary technical skills to improve their own livelihood and to contribute toward the national development efforts. The use of “learning themes”, then, is especially appropriate in education, since a learning theme provides a self-sustaining framework within which both the theoretical and practical aspects of educational subjects may be taught.

The terms “learning” or “educational” themes, however, may engender certain confusion. There are those who define “learning themes” methodically into “learning experience”, “learning community” and “learning environment” (Chancellor of the University of Wisconsin, 2003). On the other hand, there are those who define “learning themes” by subjects, such as “Developing a Quality-Oriented Culture” (Irish Higher Education Consultancy, 2003), “Health Education” (Education and Training Inspectorate, 1999) and “Information and Communications Technology” (Ibid.). The present paper adopts the second set of definition for educational themes and proposes “emergency telecommunications” as an educational theme at the secondary or tertiary levels. The paper first introduces the concept and history of emergency telecommunications. It then illustrates the suitability of emergency telecommunications as an educational theme. Finally, the paper discusses some of the opportunities and challenges in the measurement of using emergency telecommunications as an educational theme, which could possibly reflect similar concern in measurement of knowledge development and management.

2.0 EMERGENCY TELECOMMUNICATIONS: CONCEPT AND PRACTICES

2.1 The International Efforts

Emergency telecommunications concerns the policy and technical framework for the provision of telecommunications resources for disaster mitigations and relief operations. In 1991, the Conference on Disaster Communications, which was held in Tampere, Finland, adopted the *Tampere Declaration on Disaster Communications* (Reliefweb, 2003a), stressing the need to create an international legal instrument on the provision of telecommunication resources for disaster mitigation and relief, in the recognition that regular communication links were often disrupted during disasters, and that regulatory barriers often crippled the use of emergency communications equipment across artificial boundaries.

In 1998, the Intergovernmental Conference on Emergency Telecommunications (ICET-98) which was again held in Tampere, Finland, adopted an international treaty, viz. the *Tampere Convention on the Provision of Telecommunication Resources for Disaster Mitigation and Relief Operations* (Tampere Convention) (Reliefweb, 2003b).

2.2 Tampere Convention

The Tampere Convention creates an international framework for the provision of telecommunication resources for disaster mitigation and relief between States and between a State and a non-State entity. Under this framework, a State which perceives the need for disaster telecommunication assistance in its territory will request such assistance through the United Nations Emergency Relief Coordinator, who will then channel the requests to other concerned entities. The Convention also provides for termination of telecommunication assistance and for dispute settlement.

The Tampere Convention also safeguards the privileges, immunities and facilities accorded to persons providing disaster assistance by granting them immunity from arrest and detention and exempting them from taxation and duties. Furthermore, many provisions of the Convention are also applicable to non-state entities such as intergovernmental organizations and non-governmental organizations.

3.0 EMERGENCY TELECOMMUNICATIONS AS A LEARNING THEME IN EDUCATION

3.1 Subjects in Emergency Telecommunications

The suitability of emergency telecommunications as an educational theme should start with the academic subjects. The concept of emergency telecommunications encompasses both “hard” academic subjects such as physics, mathematics, chemistry, telecommunications and work shop skills, as well as “soft” academic subjects such as history, geography, languages, law and morals. Thus, it may be argued that emergency telecommunications could be an educational theme suitable for “comprehensive” (i.e., “science and technology” plus “humanistic”) education.

Emergency telecommunications would require plenty of technical knowledge in physics and mathematics. The emergency telecommunications workers must understand the physical theories behind telecommunications and be able to perform the necessary formula derivation and data calculations which are crucial to the successful setting up and operations of an emergency telecommunications systems. They must also know enough about chemistry to be able to secure and maintain the power supply necessary for the proper running of the emergency telecommunications system. Work shop skills must also be acquired by the emergency telecommunications workers as the exigency and chaos of the disaster sites would often require a lot of hands-on skills on the part of the workers, from light repair to major overhaul of emergency telecommunications equipment and accessory.

Of importance for a student and future emergency telecommunications worker is his knowledge of the history and geography of the host country in which he works. He must be sensitive about the cultural heritage of the host country, so as not to run afoul of the goodwill of the local population or authority, the cooperation of which he and his colleagues depend upon. Geography is also important for the worker technically in setting up his emergency telecommunications system. The successful telecommunications must also be able to learn and practice more than just his mother tongue and English. He should broaden his linguistic ability by acquiring at least another foreign language, so that it would one day be

useful when he is operating in a country where neither English nor his mother tongue is the lingua franca. The student and future emergency telecommunications worker should also know enough about the law, and especially international humanitarian law, to be aware of his rights, privileges and obligations in the host country. By immersing himself in emergency telecommunications as an educational theme, the student would also begin to appreciate the importance of humanitarianism, which is the basis of emergency telecommunications activities, and morals to the proper shaping of his own character, thereby enabling the cultivation of good citizenship.

3.2 Educational Methods

Borrowing the ideas of the Chancellor of the University of Wisconsin (2003), emergency telecommunications as an educational or learning theme can be divided into “learning experience”, “learning community” and “learning environment”. In terms of learning experience, the students should be exposed to a variety of pedagogical methods, ranging from classroom instruction of theories and computer simulations to practical training in the fields. The learning community, in addition to the students, should include both qualified teachers as well as professional practitioners in emergency telecommunications whose real-life experience would richly benefit the students. The learning environment must also secure cooperation and support from the authorities who are in the position to provide the realistic environment necessary for the training of the students in emergency telecommunications. The sanctity and preservation of the environment is also equally important.

3.3 Benefits of Using Emergency Telecommunications as an Educational Theme

Education and Training Inspectorate (1999) identified several features in schools where provisions of information and communications technology (ICT) as an educational theme has been good or excellent. Similar features could also be described as the ancillary benefits which emergency telecommunications as an educational theme could bring to a school. These benefits include:

- a commitment in policy and practice to all children gaining confidence and capability in emergency telecommunications;
- clear, effective whole-school planning supporting progression and balance in the children’s experiences;
- good use being made of emergency telecommunications, to support teaching and learning in subjects across the curriculum;
- the students’ enthusiasm about their work with emergency telecommunications, and their recognition of the relevance of ICT in their everyday lives.

3.4 Challenges of Using Emergency Telecommunications as Educational Theme

Nevertheless, emergency telecommunications as an educational theme also faces several challenges. The novelty of emergency telecommunications as an academic subject matter, not to mention as a potential learning theme, makes it almost inevitable that emergency telecommunications would be viewed suspiciously by all parties concerned, ranging from educational administrator and teachers to the parents and students, thus rendering its adoption as a learning theme at best a very slow process. There is also the danger that the teaching of emergency telecommunications may slant toward the “hard” as opposed to the “soft” subjects in a science and technology education setting. That would be very unfortunate, since, as emphasised above, to be effective as an educational theme emergency telecommunications must include both the “hard” and “soft” subjects. Yet another difficulty that may be encountered is the lack of qualified professional who may be able to teach the students the more hands-on aspect of emergency telecommunications.

4.0 MEASUREMENT ISSUES IN USING EMERGENCY TELECOMMUNICATIONS AS AN EDUCATIONAL THEME

In terms of measurement, using emergency telecommunications as an educational theme also brings both opportunities and challenges. It goes without saying that in a highly hands-on and practical educational environment as is envisioned when using emergency telecommunications as an

educational theme, traditional measurement methods may not be most suitable. Therefore, opportunities abound for using emergency-telecommunications themed education as “test bed” for both innovative testing methods and new performance measurements. For example, it could engender more research into how to measure the learned ability of students to handle crisis, as is rife in an emergency setting. In addition, emergency-telecommunications themed education also enables the infusion of information and communication technology into educational measurement and evaluation. This is often not a fancy, but a necessity. For example, students in emergency telecommunications may have to go to disaster sites for their practical training. The use of information and communication technology to monitor their progress and performance would then be indispensable. Indeed, this can even be a research issue as part of their themed education.

However, measurement in using emergency telecommunications also face several challenges. First among these is the issue of standardisation. By necessity, emergency-telecommunication themed education is difficult to standardise, having to take into consideration the unique local circumstances of the educational environment as well as the available resources. As such, it is also difficult to standardise the measurement across the board, even within the same subjects. For example, while in developed countries more practical examination of students in their ability to handle telecommunication equipment could be conducted, the same may not be feasible in impoverished developing countries, which may have to resort to more written examinations. As this problem is financial in nature, it should be solved financially, perhaps by those countries that could afford the necessary teaching resources to assist those countries that could not, perhaps under the umbrella of the Tampere Convention. In addition, similar to the challenge facing emergency-themed education in general, there may be a lack of qualified professional or education to perform the measurement. This could possibly be overcome by the so-called “train the trainer” sessions.

5.0 CONCLUSIONS

Emergency telecommunications is the use of modern information and communications technology for humanitarian purposes. It could become an educational theme, developing both

the technical skills as well as shaping the characters of a student. Emergency-themed education is faced with both opportunities and challenges, not the least in its measurement, which could, to a large extent, reflect the concerns in measurement of knowledge development and management. It is hoped that with the gradual adoption of emergency telecommunications as an educational theme, students will acquire both the abilities and the attitude to engage in one of the most lofty goals of human civilisations – the utilisation of modern technology for the savings of precious lives.

6.0 REFERENCES

Chancellor of the University of Wisconsin. (2003). *Learning Themes for the Future*, <http://www.news.wisc.edu/chancellor/vision/4.html> [27 September 2003].

Education and Training Inspectorate. (1999). *Report on the Educational Themes: Primary Inspections 1998-99*, Bangor, United Kingdom: Department of Education.

Irish Higher Education Consultancy. (2003). *Managing for Continuous Improvement*, <http://www.ihec.net/manage.html> [27 September 2003].

Oh, E. S. (1997). Interview with Hans Zimmermann, United Nations Senior Humanitarian Affairs Officer, Geneva, Switzerland.

Oh, E. S. (2001). The International Efforts in Emergency Telecommunications: An Overview and Analysis. In Proceedings of 6th Asia-Pacific Regional Conference of International Telecommunications Society. Hong Kong, China: Hong Kong University of Science and Technology.

Pemberton, J.D. and Stonehouse, G.H. (1999). *Learning and Knowledge Management in the Intelligent Organisation. Participation and Empowerment: An International Journal*. 7(5):131-144.

Reliefweb. (2003a). <http://www.reliefweb.int/telecoms/policy/legal1983.html> [27 September 2003].

Reliefweb. (2003b). <http://www.reliefweb.int/telecoms/tampere/index.html> [27 September 2003].

