

## References ■

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## ERRATUM

## Omission of Abstract from Proceedings

The following abstract was omitted from the Posters section of the *Proceedings of the AMIA Annual Fall Symposium 1998*<sup>1</sup>:

**Developing Virtual Patients:  
Taking a Lesson from the Tamagotchi**

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In recent years, the Tamagotchi, an electronic virtual pet, has taken the world by storm. A Japanese invention, the toy requires the electronic pet owner to look after it with tender loving care through daily "feeding," "playing," and "toilet training" by pushing little buttons on a pocket-size screen. Failure to look after the pet results in its "death."

Since its release, young children and teenagers have become hooked on the toy, to the extent that several studies have found it to have undesirable sociologic and psychologic effects, particularly on school children. The children bring their pet to school in order to look after it when the toy beeps for attention, to the annoyance of teachers. Worse still, children have been found to grieve and suffer psychologic distress over the "loss" of their pet.

At the NUS Medical Informatics Program, we have found a positive use for the Tamagotchi concept in the development of virtual patients. Using VBscript and Active-X, we have constructed an interactive Web site to train users in the proper care and management of a virtual patient who is diabetic. The site contains textual as well as video clips that show various elements of diabetes self-care, including the proper administration of insulin and the correct use of a glucometer. If the user dutifully looks after this virtual diabetic patient, the virtual patient will thrive and the disease will be well controlled. If management of the patient is neglected, the patient's condition will deteriorate in accelerated time.

The user can choose from three levels of "play." The amount of allowed deviation from stipulated criteria, such as caloric intake, decreases with increasing level of play (difficulty).

To speed up the game, an accelerated 24-hour clock is used, with the 24 hours played out in 30 to 50 minutes. There are reminders to inject insulin as well as reminders to eat regularly and not to skip meals.

User input is through the insulin module and the dietetics module. Clicking on the insulin module administers insulin to the patient, whereas clicking on the dietetics module feeds the patient. The user chooses from two different menus—(a) a mix-and-match menu that allows him to pick from basic food groups like staples/carbohydrates such as rice or noodles, proteins, and fibers, or (b) a menu of prepared meals, including various types of fast foods and popular local dishes available from food centers and canteens. As a food item is selected, the caloric intake for that particular meal combination is registered on the screen in real time.

We consider the use of the Tamagotchi concept a novel way to educate patients, and the general public, on the importance of medication compliance through a gaming approach. Such virtual patients help promote awareness of the importance of self-care in the total management of chronic illnesses.

The virtual patients of the Medical Informatics Program can be accessed from the MIP Multilingual health information Web site, Health ONE, at <http://www.health1.nus.edu.sg>.

## References

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