The Internet of Things
And Its
Implications for Language Education & Research

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Unitec, New Zealand
What do the following have in common?

Bayesian Networks
Nonnegative Matrix Factorization
Native Forests
Association Rule Mining
Pacing

Based on the pressure of footsteps, a strip of 2-foot-square tiles tracks stride length, step interval, and which parts of the foot are bearing the most weight. It uploads the data to Tactonic’s cloud system, which keeps the person’s normal stride on file.

Hollywood past

Perlin won an Academy Award in 1997 for advances in computer imaging.

Other uses

The tiles could be used to figure out how to make factory layouts more efficient, Hendee says, or track shoppers’ paths through stores.

Funding

Three-year-old Tactonic is self-funded. New York University, where Perlin teaches computer science, owns a small stake.

Price

The company says it will sell the system to home users for $250 per strip of three tiles.

Review

Tactonic’s system compares the new data with earlier strides to provide a progress report on the person’s mobility, balance, and activity, then sends that feedback to a caretaker using the company’s app.

Next Steps

Tactonic, which plans to start selling IntelliMat tiles on its website later this year, is refining them to track arthritis, joint weakness, and Parkinson’s disease. Beyond in-home care, the tiles could be valuable to hospitals and physical therapists, says John-Ross Rizzo, who teaches rehabilitation medicine at NYU’s Langone Medical Center and has tested the tiles. “Being able to do gait analysis at this price point is really exciting,” he says.
Three broad areas

Mobility
Augmentation
Ubiquity

What do these mean for language learners, teachers and researchers?
5 characteristics of mobile technologies

1) Portability
2) Social interactivity
3) Context sensitivity
4) Connectivity
5) Individuality.

(Klopfer et al, 2002)
Portability
Social interactivity
Context sensitivity
Connectivity
Individuality

Distributed
Collaborative
Situated
Networked
Autonomous
20 Ideas for Using Cellphones With Students

Idea 1: Use the Notes feature to collect samples of everyday language
Idea 2: Use the Camera to take pictures of authentic texts
Idea 3: Use free programs to organize language samples
Idea 4: Use the Voice Memo Recorder to record TV and radio samples
Idea 5: Use the Voice Memo Recorder to record conversations outside class
Idea 6: Use Text Messaging to reinforce vocabulary learning
Idea 7: Use free programs to make flashcards for mobile phones
Idea 8: Use Text Messaging for circular writing
Idea 9: Use Text Messaging for tandem learning
Idea 10: Use the phone to keep a blog
Idea 11: Use the phone for microblogging on Twitter
Idea 12: Use the phone for social networking
Idea 13: Use the phone for a language exchange
Idea 14: Use the phone for geotagging, ‘checking in’ and leaving comments
Idea 15: Use mobile phones to distribute listening material
Idea 16: Use mobile phone memory to distribute reading material
Idea 17: Use the phone to play games
Idea 18: Use the Voice Memo Recorder, Notes, and Calendar to keep a portfolio
Idea 19: Use the mobile to check student comprehension and get feedback
Idea 20: Use the phone memory for research and data collection
Augmentation
The integration of digital information with the user’s environment in real-time
Implementing mobile language learning with an augmented reality activity

Hayo Reinders and Onuma Lakarnchua use an AR app as the tool for a class project.

**Introduction**

Mobile learning offers great potential for language teachers to support practice beyond the classroom, to encourage anytime-anywhere learning and to facilitate situated learning. For other teachers who may wish to use AR or other mobile learning activities with their students.

**Mobile-assisted language learning and augmented reality**

extent they can impact pedagogical practice. We propose the above features have the potential for learning and teaching that is:

1. Distributed; not limited to one place or time.
Learning does not work well when learners are forced to check their bodies at the schoolroom door [...]. School learning is often about disembodied minds learning outside any context of decisions and actions. When people learn something as a cultural process their bodies are involved because cultural learning always involves having specific experiences that facilitate learning, not just memorizing [things].

(Gee, 2004, p. 39)
Ubiquity
Reader Submitted

Mersiv Learns Your Life So You Can Learn Languages

DESIGNER: JOE MILLER & DCA DESIGN INTERNATIONAL
CLIENT: DCA DESIGN INTERNATIONAL
<table>
<thead>
<tr>
<th>The Internet of Things</th>
<th>Permanency</th>
<th>Always-on Learning</th>
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<tbody>
<tr>
<td>Mobility</td>
<td>Accessibility</td>
<td>Experiential Learning</td>
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<td>Augmentation</td>
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<td>Ubiquity</td>
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| 1 | Orthodox intentional data  
   | e.g. survey, focus group, interview |
| 2 | Participative intentional  
   | e.g. crowdsourcing |
| 3 | Consequential data  
   | e.g. admin records, health records |
| 4 | Self-published  
   | e.g. blogs, profiles, CVs |
| 5 | Social media  
   | e.g. Twitter, Facebook |
| 6 | Data traces  
   | e.g. search and purchase histories |
| 7 | Found data  
   | e.g. observations |
| 8 | Synthetic  
   | e.g. simulations |

(Purdam & Elliot 2015, p.28)
This is a world where massive amounts of data and applied mathematics replace every other tool that might be brought to bear. Out with every theory of human behavior, from linguistics to sociology. Forget taxonomy, ontology, and psychology. Who knows why people do what they do? The point is they do it, and we can track and measure it with unprecedented fidelity. With enough data, the numbers speak for themselves.

MAKING SENSE OF BIG DATA

Educational Data Mining
‘...deals with the development of methods to explore data originating in an educational context’ (Romero & Ventura, 2010, p. 601)

Learning Analytics
‘...the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimising learning and the environments in which it occurs’ (Siemens & Gašević, 2012, np)
Affordances

Authentication (attendance)
Affordances

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Early identification and targeted support
Adaptive and personalised learning
Affordances

Authentication (attendance)
Early identification and targeted support
Adaptive and personalised learning
Predictions
The measurement, collection, analysis, and reporting of data about learners and their contexts for purposes of understanding and optimising learning and the environment in which it occurs” (Siemens and Long, 2011).

University of Maryland, United States

Students who obtain low grades use the VLE 40% less than those with C grades or higher.

Used to identify effective teaching strategies which could be deployed on other modules.
Nottingham Trent University, UK

Strong link with retention- less than a quarter of students with a low average engagement progressed to the second year, whereas over 90% of students with good or high average engagement did so.

Strong link with achievement - 81% of students with a high average engagement graduated with a 2:1 or first class degree, compared to only 42% of students with low average engagement.

27% of students reported changing their behaviour after using the system.

Received a positive reception among students and staff.

One third of tutors contacted students as a result of viewing their engagement data in the Dashboard.
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VITAL PROJECT

VISUALISATION TOOLS AND ANALYTICS TO MONITOR ONLINE LANGUAGE LEARNING & TEACHING
Students like having information

Students want control over what information they see

Students want control over when information is displayed

Students want clear indicators of progress

Students want early alerts and recommendations for improvement

Important cultural differences: comparison data with other students
Questions

How are we preparing for the impact of mobility on our field?

And how about augmentation and ubiquity?

How can we harness the advent of big data?

What impact will all this have on the roles of educators?

What (additional/different) skills will we need to develop?