Orchestrating learning in the language classroom: the IWB as digital dashboard

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L'uso della lavagna interattiva multimediale (LIM) è sempre più diffuso nella scuole e può essere anche uno strumento molto utile per l'insegnamento delle lingue. L'autrice ha un'ampia esperienza con l'uso di questa tecnologia e ne descrive alcuni pregi e svantaggi. L'uso della LIM può risultare in un aumento della motivazione, aumentare le opportunità di fornire agli studenti dei contenuti linguistici e culturali, o ancora creare delle possibilità di interazione nella classe, ma può anche portare ad un insegnamento frontale e più centrato sul docente. Anche se l'uso della LIM non implica per forza un miglioramento dei risultati dell'insegnamento, l'autrice spiega come la LIM può avere un valore aggiunto per l'apprendimento delle lingue. Attraverso esperienze, esempi e proposte concrete, l'autrice descrive diversi vantaggi pratici ed organizzativi della LIM (nella fattispecie per l'offerta di risorse multimediali, la presentazione dei materiali l'uso comunicativo, la produzione scritta ed orale, il feedback, o ancora per affrontare la *focus on form* e la promozione dell'autonomia degli studenti). Nell'ultima parte dell'articolo vengono presentate alcune raccomandazioni per la formazione dei docenti.

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Today's technology-rich environments present a number of challenges and opportunities for language learning. In educational circles, new methodologies based on blended learning, the flipped classroom, mobile learning, and game-based learning, to name but a few, are recommended for digitally literate and digitally motivated learners. For language teaching in particular, communicative, task-based, and socio-constructivist approaches are promoted, emphasising collaborative learning, authentic language, emergent language, and learner autonomy, again among many other buzzwords and trends. These developments are set against a backdrop of traditional institutional infrastructures, with their constraints of obligatory programmes and curricula, assigned textbooks, examination requirements and, of course, limited technical and human resources. In this paper I will argue that one particular technological tool, the interactive whiteboard (IWB), can offer a single, fixed point from which many of these differing and often conflicting demands can be addressed. A large, touch-sensitive screen on which a computer desktop is projected and manipulated (see inset on p.58), the IWB can serve as a digital hub or dashboard to display, monitor and control aspects of language learning which

- occur in class and out, face-to-face and online;
- involve authentic, modified and learner language;
- accommodate input from teachers and learners; and
- admit individual, group or whole-class modes.

Unfortunately, the IWB can also be used as a convenient white space for the teacher to project lecture material. It is the purpose of this article to suggest why such an approach is neither helpful nor inevitable, and how it may be avoided in IWB-mediated language teaching.

A substantial body of recent research in general education shows that classroom IWB use can improve motivation, lesson pace, and multimodal instruction (Beauchamp & Kennewell, 2010; Glover *et al.*, 2007). For foreign language education, studies report similar findings with respect to motivation and pace (Cutrim Schmid, 2010; Gray, 2010) and also highlight improved access to linguistic and cultural resources (Cutrim Schmid & van Hazebrouck, 2012) as well as increased interactional opportunities, via video-conferencing, for example (Whyte, 2011). Against this must be set a number of criticisms of IWB-mediated teaching environments, including

1. no demonstrable gains in learning outcomes (e.g., Karsenti *et al.*, 2012, also reported in the press by Gervais, 2013; Lee, 2013)
2. the absence of added-value beyond the affordances offered by the use of a computer or other device and video-projector; some consider large-scale interactive displays have been

superseded by mobile technologies (e.g., see Mavridi, 2013, for practitioner discussion)
3. a tendency towards teacher-fronted and teacher-centred instructional delivery (Cutrim Schmid, 2010; Gray, 2010)
4. a lack of appropriate, inspiring teaching materials (Colpaert, in press; Cutrim Schmid & van Hazebrouck, 2012).

If we agree with Colpaert (in press) that "no technology, not even the IWB, carries an inherent, direct, measurable and generalizable effect on learning" then it seems unrealistic to expect research to demonstrate clear gains in learning outcomes for IWB-supported instruction. It thus remains for me to show the added value of the IWB in the language classroom, and especially how problems of teacher-centredness and materials development may be addressed. To do this, I continue with the metaphor of IWB as digital dashboard from which learning – cognitive development - can be effectively orchestrated.

The IWB as digital dashboard

Table 1 shows the basic functions we expect to find on the control panel of a vehicle or the virtual dashboard of a blog or game centre. Combining a number of tools and indicators in a small space, the dashboard provides an **overview** of objectives and progress by **displaying** information about resources which users can then **select** and **modify**. Results can be **monitored** and subsequent activity **adapted** accordingly, and comprehensive **records** maintained: when activity is stopped, everything is available on restarting. Table 1 shows these affordances of the IWB as dashboard compared to a regular black/whiteboard and computer + video-projector set-up, with an indication of the cognitive skills drawn from Bloom's taxonomy which each calls upon (Bloom et al., 1956).

Table 1 shows the wider range of possibilities available with an IWB compared with other forms of display in terms of learner participation, choice, and autonomy. This is particularly clear in comparison with a regular black- or whiteboard, where opportunities for annotation and revision, exploiting multimedia, and keeping a record of class activities are severely limited. The main difference with a computer and projector set-up concerns the perceived ownership of learning tools: although the IWB merely allows the manipulation of a specific computer via its large display screen, a number of factors contribute to making the IWB a more genuinely collaborative

Table 1: Affordances of IWB as dashboard compared with whiteboard and computer + projector

Activity/Tool *(cognitive skill)*	IWB	Whiteboard	Projector
Overview (*synthesise, evaluate*)	Start and stop lesson. Access lesson plans. Check homework.	Blank slate (at best).	No learner access, data saved depends on device used.
Display (*understand, remember*)	Show image, text, video for collective viewing.	Physically affix posters, flashcards, labels.	Controlled by device owner using data on device or online.
Select (*apply*)	Choose resources and activities. Decide on areas of focus. Highlight elements on page.	Use coloured pens. Draw diagrams. Circle elements.	Controlled by device owner.
Modify (*create, apply*)	Participate in activities. Complete tasks in class or as homework. Annotate, highlight, move elements.	Write instructions. Provide written task support (vocabulary, grammar rules).	Controlled by device owner, saved and shared separately.
Monitor (*analyse, evaluate, synthesise*)	Verify progress. Check comprehension, accuracy. Access web-based dictionaries, encyclopedias.	Provide written correction. Fill in blanks. Use check marks or crosses.	Controlled by device owner.
Adapt (*apply*)	Move back and forth within file. Use IWB as communal web browser.	Linear, chronological, space constraints.	Controlled by device owner.
Record (*understand, remember*)	Save IWB file for future modification. Record interaction at IWB with screen-capture software. Make PDF copy of pre-/post-lesson files.	Physical record possible through note-taking or photographs.	Controlled by device owner and shared separately.

space. The IWB computer is generally a permanent classroom fixture, and this, together with the absence of a keyboard, makes the device less likely to be perceived as the property of a particular participant (usually the teacher). Then, observers at a little distance often gain a clearer picture of both tools and content than the person at the IWB itself, sharing the responsibility for creating and conveying meaning between presenter(s) and audience. Finally, proprietary IWB software can insulate the learning environment from other ICT-related distractions related to the specific configuration of the computer or device, or to particular programmes and websites, again diluting the impression of working with a device belonging to a particular user.

But what specific advantages for language teaching and learning does the IWB afford? In the following, I examine eight different affordances of IWB technology with direct relevance for second language instruction, with examples of the advantages as well as potential pitfalls or caveats in each case. Since many of these drawbacks can be avoided by experienced teachers, questions of teacher education for IWB-mediated instruction are addressed in the final section of the paper.

IWB affordances for teaching and learning languages

The IWB offers instructional advantages at the most basic of what Reinders and White (2010) refer to as "practical" and "organizational" levels. In terms of theories of second language acquisition and teaching, the IWB also supports the creation of opportunities for language input, learner interaction and negotiation of meaning, and reflection on input and output. These notions are identified as important for language learning in theories such as the interaction hypothesis (Gass, 2008) or the noticing hypothesis (Schmidt, 2001). They have been incorporated into teaching approaches like communicative language teaching (CLT; Savignon, 2007) and task-based language teaching (TBLT; Ellis, 2003) and the IWB can play an important role in promoting them in the classroom (see Whyte, in press). A number of specific affordances and uses of the IWB to address both practical and pedagogical issues are examined in turn.

1. Practical and organisational advantages

The IWB allows rapid, streamlined access to a variety of teaching and learning resources

Example

Administration and teaching resource files for each class can be saved on IWB computer or online for easy access by teacher and/or learners

Advantage

- Improves efficiency in terms of teacher preparation time
- Increases lesson pace allowing more time for learning

Caveat

- May increase lesson pace at the cost of understanding
- May encourage teacher-centred pedagogical format

In a discussion of the role of the IWB in improving efficiency in planning lessons, preparing resources, and implementing activities, Hillier (2013) provides links to video examples of classroom practice and quotes from teachers involved in the European project iTILT (interactive Technologies In Language Teaching, http://itilt.eu). One primary teacher of Welsh explains:

> "Using the IWB is just so much quicker. It's just there and you don't have to wait until you have written everything on the board. You can plan it all before the lesson so you can just get it up there straight away and it helps the lesson flow."

Another primary teacher of EFL in France comments:

> "It's easier with the IWB. The CD is OK, but it's not very efficient. Here you've got the picture and the mp3, you can match them. When you've got "the nose, the mouth," and you can match with the audio: on the IWB you can; without, you can't."

2. Mediation of multimedia resources

The IWB allows the integration of text, images, audio, video and animated resources to provide rich target language input for language learners

Example

Audio and video files can be embedded in IWB file pages, or saved as attachments to the file; internet links can also be embedded or attached

Advantage

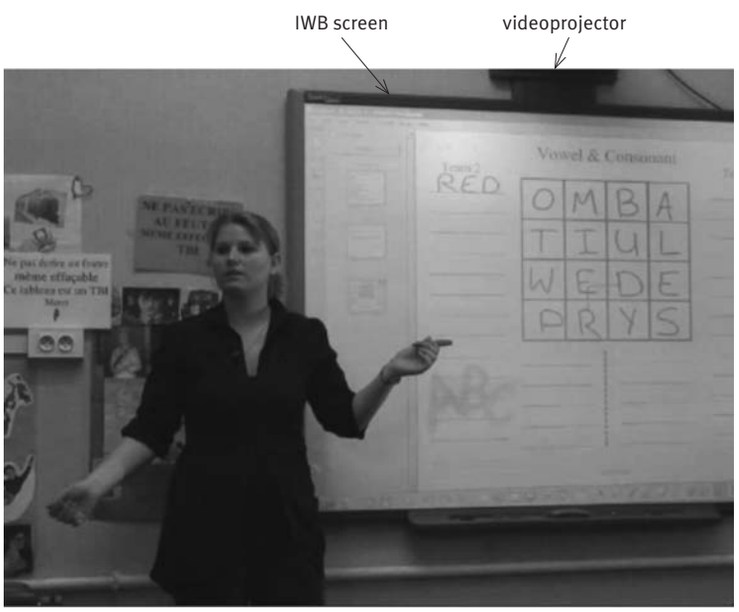
- Improves efficiency and pace in preparation and implementation of lessons
- Increases exposure to a greater variety of comprehensible samples of the target language
- Mediation of L2 input via IWB software improves understanding and learning

Caveat

- Too much input may lead to cognitive overload for learners
- Too much mediation may give an impression of "spoon-feeding" learners, thus preventing the development of autonomy

Using video examples of IWB-mediated language teaching, van Hazebrouck (2013) analyses a variety of ways to exploit authentic materials.

The IWB: how it works



The interactive whiteboard (IWB) is a large touch-sensitive display linked to a computer and videoprojector. Like a computer-videoprojector set-up, the IWB thus allows classroom participants to view files using any programmes installed on the computer. It can be used to show videos, play slideshows or browse the internet, with the IWB functioning as a second computer screen connected to the projector via a VGA cable.
Unlike the computer-videoprojector set-up, however, the IWB allows users to manipulate the computer from the screen itself, since it is connected to the computer via a USB cable providing touch-sensitivity. In this way, teachers and learners can access the computer publicly and collaboratively. They can demonstrate how to use particular programmes, conduct internet searches together, and share digital resources in both planned and improvised ways. The traditional functions of writing and drawing on the board are accomplished using specific IWB software, either proprietary programmes purchased with the hardware, or free alternatives. These programmes also allow the insertion of links to other files and webpages, the display and manipulation of previously prepared teaching materials, and the saving of class work to continue in later sessions or to share in PDF format.

Even very young learners can articulate the advantages of exposure to target language resources:

> "The normal whiteboard doesn't really help us learn anything because you're just writing down stuff. But the IWB is better because it can teach you lots of stuff. For example, you go on the Internet and if you wanted to type in a Welsh thing then it would just come and teach you stuff."

One teacher also values the role of the IWB in supporting comprehension:

> "When someone still hasn't understood what "go straight ahead" and "then turn right" mean, if their classmate is just reading aloud, they will have no idea. But when it's shown on the IWB at the same time, "the third street on the right" then they see, "OK, it is the third street on the right," because they have the picture."

3. Design of materials for communicative language use

The IWB allows the conception and planning of learning activities involving meaningful communication in the target language

Example

IWB pages can display combinations of text and audiovisual elements to support games, quizzes, role-plays, discussions, debates, and brainstorming

Advantage

- Teaching materials are not limited to single texts or audiovisual resources
- Learning activities are not limited to discrete-point question-answer pairs, or grammar-translation activities
- Availability of materials beyond class time frees time and attention for in-class activities

Caveat

- Technical interactivity can distract from pedagogical interactivity
- Participants need to believe in importance of communication for learning; the IWB is also compatible with other pedagogical approaches, and can support grammar-based, PPP instruction

Current second language teaching methodology based on interactional, task-based and socio-constructivist theories of language acquisition agree on the importance of opportunities for learner interaction in the target language. Many educators seem to expect the use of technology labelled "interactive" to lead directly to "interactive" learning: in the language classroom, this would correspond to meaningful interaction in

the target language. However, a substantial amount of research into IWB use in educational settings takes pains to distinguish superficial interactivity with the IWB from different levels of pedagogical interactivity among classroom participants (Beauchamp & Kennewell, 2010; Glover et al., 2007; Jewitt et al., 2007). Table 2 illustrates the terms used in different studies to describe a range of IWB-supported teaching styles from "technical," "didactic," or "authoritative" modes of teaching (level 1), through more "interactive," "dialectic," and "dialogic" approaches (level 2), to more ambitious kinds of "conceptual," "enhanced," and "synergistic" interactivity (level 3).

In the language classroom, low levels of IWB-supported interactivity might involve drag and drop gap-fill grammar exercises, prepared by the teacher in advance and controlled during whole-class, teacher-centred activities. The higher levels of interactivity which allow learners to take the initiative, make their own spontaneous contributions, and influence the way activities unfold during class would correspond more closely to the principles of communicative and task-based teaching. Examples of different levels of interaction can be accessed online in Whyte (2013a).

4. Learner performance: opportunities for language production

The IWB can support the use of the target language by scaffolding oral production and mediating writing in various formats

Example

IWB pages can display vocabulary or grammatical structures, or images to aid learners in constructing utterances

Advantage

- Current second language teaching methodology emphasises the role of output, or language production, in driving language acquisition
- Sustained oral production can be difficult without visual support
- Attention to form in written production is also facilitated by collective viewing and annotation

Caveat

As with slideshow presentations, for example, training is required for effective orchestration of different resources

In a selection of illustrations of IWB use to promote learner autonomy, Stanley (2013) cites an example where the teacher comments on both planned and unplanned uses of the IWB. She says sharing the IWB file with students after class "allows learners to listen more actively because they know the notes will be uploaded on the online platform afterwards." She also says the IWB allows for unplanned activities: "I added a slide there because content hadn't really be discussed. This is something I had not prepared as such. But the IWB allows you to remain flexible." This leads into our next point.

5. Opportunities for planned and unplanned interaction

The IWB can support learning activities designed by the teacher with a particular learning objective but also accommodate unexpected, spontaneous classroom developments

Example

A new IWB page can be inserted into a current file to accommodate unexpected contributions, to be exploited immediately or saved for later

Advantage

A true focus on meaningful interaction will lead learners in unpredictable directions; the more learner responses can be ratified and exploited, the greater motivation and engagement are likely to be

Caveat

The potential for flexible responses to ongoing classroom interaction places greater demands on the teacher both linguistically and pedagogically

Table 2: Different levels of interactivity in IWB use and materials design (adapted from Whyte, in press).

Types of interactivity at the IWB						
Level 1	no interactivity	lecture	supported didactic	IWB illustrates, learners copy from IWB	technical	teacher displays, learners copy
	authoritative	teacher controls IWB, fixed questions and answers				
Level 2	dialectic	learners use IWB to justify responses	interactive	teacher uses more tools	physical	teacher presents, learners come to IWB to show answers
	dialogic	input is provided by learners as well as teacher				
Level 3	synergistic	all learners use IWB to contribute ideas	enhanced interactivity	fluent technology use, flexible lesson structure	conceptual	learners contribute, teacher at back of classroom

Some of the difficulties facing generalist teachers in using teaching approaches which focus on language interaction and conceptual IWB-supported interactivity arose during a telecollaborative project linking young primary EFL learners in France and Germany (Whyte & Cutrim Schmid, 2013, in press). The French teacher, a French-Spanish bilingual, commented, "Because with kids you have to find the pedagogical approach. To go further, and this is where our training falls down - I could do it in Spanish no problem, but in English I can't - we should teach CLIL." This teacher felt she lacked the linguistic resources to orchestrate unplanned interactional episodes in English. She also acknowledged the particular pedagogical demands of young learners and felt the need to adapt her teaching style to take advantage of IWB-mediated interactional opportunities.

6. Feedback on learner language

The IWB allows the mediation of feedback on language interaction and learner production by integrating presentation and annotation features

Example

Highlighting, moving, and editing elements in learner texts, or writing notes alongside embedded learner audio recordings

Advantage

- Collective reflection on language form is facilitated by the preservation of a meaningful context (focus on form)
- The digital format allows access to more language samples

Caveat

Public feedback and correction can be face-threatening for learners and more demanding of teachers than traditional homework correction

Although efforts to integrate the IWB into language teaching have frequently involved moves towards communicative and constructivist pedagogical approaches, research shows that teachers may resist these methodologies. Gray (2010) shows how secondary teachers in the UK used the IWB to increase teacher control over undisciplined and poorly motivated classes, while Cutrim Schmid and Whyte (2012) documented the variety of activities implemented by state school teachers in France and Germany based on their particular beliefs and pedagogical contexts. Both studies showed examples of IWB use in support of grammar-oriented, teacher-fronted presentations. In further work comparing IWB-mediated teaching episodes with teacher profiles, Whyte and Alexander suggest that development away from form-focused instruction depends on a number of factors, including IWB-related competence and confidence, and level of engagement with professional development opportunities (2013, in press).

7. Reflection: focus on form

The IWB allows focus on form (as opposed to focus on formS, or grammar instruction) by facilitating the annotation of text and moving of elements

Example

Highlighting, moving, and editing elements in learner texts, or writing notes alongside embedded learner audio recordings

Advantage

- Highlighting, moving and copying elements of authentic or adapted texts, combining transcripts with audio or video excerpts, using phonetic symbols
- Focus on form in meaningful contexts helps maintain learner engagement and facilitate understanding and uptake

Caveat

- Risk of technical interactivity replacing conceptual interactivity
- Too much focus on form detracts from communicative intent and task completion

Koenraad (2013) highlights examples of IWB-mediated language teaching which maintain learner motivation during focus on form activities, for example, by using games. The German lower secondary EFL learners in one class commented:

> "Children learn a lot better when it is like a game because then it's fun and then you can learn better. When you have those boxes and you draw out some words then it's like a game, and then you automatically learn better."

8. Collaboration and learner autonomy

The IWB can increase autonomy, confidence and motivation by involving learners in all stages of learning process

Example

Offering learner choice through materials design, implementation of activities, inclusion/recording of unplanned questions, and effective sharing of group work.

Advantage

- An IWB file for a particular teaching unit may contain more resources than required to allow for learner choice
- Extra pages may be added to accommodate unplanned ideas and activities.
- Learners can use the IWB to display the results of group work, or to follow up on spontaneously emerging questions

Caveat

Teachers needs to have confidence in this approach and in learners' ability to work with less strict supervision than they may be used to.

The IWB offers a wide range of possibilities for teaching and learning activities to promote learner autonomy and motivation, as well as effective and efficient class activities.

There are a number of reasons teachers might seek to promote learner autonomy in the language classroom. First, since the main factor affecting acquisition is quantity of input (i.e., the time learners spend engaging with the target language) and our contact time with our learners is necessarily limited, we might hope that more independent learners would be able and willing to work on language learning activities outside class time. The IWB can help promote autonomy by developing ICT skills which will help learners access resources and complete assignments using digital tools. Its dashboard function also allows the display of learner productions created outside class for feedback and correction.

Second, increased learner autonomy creates better opportunities for adaptive or differentiated teaching which takes individual learner variables (proficiency, motivation, maturity) into account. Learners who are able to regulate their own learning behaviour can work effectively without constant, close teacher supervision, allowing differentiated group and project work within and across class sessions. The IWB can support group work during collaborative sessions involving writing, preparing slides, or using audiovisual resources. Since no single learner owns or controls the IWB, it can encourage collaboration rather than cooperation.

Finally, and perhaps paradoxically, the IWB also fosters learner autonomy by reinforcing teacher authority. As the natural focal point of the classroom, being potentially the brightest, loudest and largest display, the IWB allows the teacher to attract and maintain class attention to launch activities efficiently, monitor progress, and provide feedback. In particular, it supports the orchestration of group work by allowing punctual whole-class interventions concerning task requirements or specific language input. See Whyte (2013b) for further examples of the role of the IWB in supporting learner autonomy.

Language teacher education for IWB-mediated instruction

From the foregoing discussion it should be clear that the IWB offers a wide range of possibilities for teaching and learning activities to promote learner autonomy and motivation, as well as effective and efficient class activities which provide the target language input, interactional opportunities, and chance to reflect which are necessary for second language acquisition. In spite of recent moves towards mobile learning, it seems likely that as long as language teaching still involves groups of learners in physical classrooms, the need for a large-scale collective viewing space will remain. And as Colpaert (in press) notes,

> "what makes IWBs very interesting is their unique position in the technological spectrum: on the one hand they feature a specific set of limitations and affordances, but on the other hand they easily fit within many learning environments as one piece of the puzzle."

However, care is required in the design and implementation of teaching education modules for the integration of the IWB into effective language teaching practice. The iTILT project has addressed a number of practical issues by designing and testing teacher education resources materials (an IWB manual for language teachers, sample teaching materials annotated for teachers and trainers, as well as over 200 short video clips of IWB-mediated language teaching practice). iTILT research shows that language teachers are aware of the tool's potential and particularly willing to allow learners access to the IWB (Whyte et al., 2012). Yet recent research suggests that effective teacher education should occur in teachers' own classroom contexts and over a sustained period of time if teachers are to learn the techno-pedagogical skills necessary to use the IWB to improve practice (Alexander, 2013; Cutrim Schmid & Whyte, 2012; Whyte *et al.*, 2013). A number of iTILT researcher and practitioners have contributed to a new resource book for language teaching with the IWB (Cutrim Schmid & Whyte, in press) which identify practical examples of collaborative action research projects and help teachers consider ways to use the IWB in their own language teaching.

In this way, the IWB can become a digital dashboard both to foster change in the language classroom by facilitating collaboration among learners in the language classroom, but also to encourage and empower teachers to experiment with new pedagogical practices.

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The full references and links to examples are available on our website: www.babylonia.ch > latest issue > article Whyte