Decoding visual elements in digitised foreign newscasts

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Despite a growing body of work in media literacy, theorists have given scant attention to the ways foreign language learners may develop media decoding skills. In the context of technology-rich learning environments, for example, how do learners come to understand the media, and how does the use of media influences their foreign language development? The aim of this case study is to examine how foreign language learners decode visual elements as they develop media literacy. Ten students of Japanese watched digitised newscasts and 'thought aloud' as they responded to short-answer comprehension tasks. Results indicate that visual elements have both assistive and deleterious affects in understanding a foreign language. Productive further research may best focus on developing a selection criteria for newscasts, using more subtle methodological techniques and creating better technology-mediated tasks.

Keywords: foreign language learning, media literacy, cognitive processes, verbal reports

Introduction

As Livingstone (1990, p. 3) explains, watching television is not simply a "routine, unproblematic, passive process" but rather it is a complex social, cultural and cognitive undertaking. As viewers strive to make sense of broadcasts, they interpret and adopt sophisticated linguistic, social and political practices on their way to becoming 'media literate' (Potter, 2005). To fully study this complex phenomena, Potter (2004) points out that media literacy scholars draw on three areas: media studies (production, content and effects), cognitive studies (message decoding and meaning construction), and pedagogy (message access, skill development and education). With a focus on cognition, Potter argues that sound knowledge structures are the basis for media literacy. These building blocks rest upon information about both the real world and media conventions, and are formed through the skills of analysis, evaluation, grouping, induction, deduction, synthesis and abstracting. Those who are highly media literate have deep and broad knowledge structures; at the lower levels of proficiency, knowledge structures are small, superficial and poorly organised and, as such, impose limits on the interpretation of meaning.

Although educators stress the need to develop media literacy (e.g., Schwarz & Brown, 2005), work on foreign language media decoding skills is lagging (Gruba, 2005). In line with cognitive studies, the purpose of this qualitative case study is to examine how students of Japanese go about trying to make sense of visual elements in Japanese newscasts. After a review of current theory, the collection and analysis of verbal reports is set out. Results are presented in a thematic framework, and the paper concludes with a summary and suggestions for continued research.

Media literacy concepts

Literacy studies are varied, wide-ranging and dynamic. Numerous sources focus on academic skills and foreign language education (e.g., Lankshear & Knobel, 2003; Kern & Shulz, 2005). Here, we focus solely on media literacy.

Though scholars often contest definitions of media literacy (Hobbs, 1998; Livingstone, 2003; Potter, 2004), one oft-cited view is that "media literacy is the ability to access, analyse, evaluate, and communicate messages in a variety of forms" (Aufderheide, 1993, p. xx). Scholars agree, too, that "a media literate person . . . can decode, evaluate, analyse, and produce both print and electronic media" (Aufderheide, 1997, p. 79). Across several prominent sites (e.g., Aufderheide (n.d.); Considine (n.d.); Pugente (n.d)), common 'principles of media literacy' recur:

- Media are constructions
- Media representations construct reality
- Audiences negotiate their own meaning
- Media constructions have commercial purposes

- Media messages contain values and ideologies
- Media messages have social and political consequences
- Each medium has a unique aesthetic form.

Notably, in the Great Britain, the term 'media education' is commonly used to refer to what is often termed 'media literacy education' in North America (Stafford, 2001). Australia, Canada and Great Britain are seen to lead developments, and historically efforts in the United States have lagged somewhat behind (Kellner & Share, 2005; Kubey, 1998). Outside of the US, media literacy education is often situated as a way to counter the possible effects of 'cultural imperialism' (Elsamer & Bennett, 2003). For American educators, media literacy training is seen as a way to teach K-12 students to view the mass media critically and guard against rampant consumerism (Hobbs, 2005). At a US-based Public Broadcasting Service (PBS) website for kids [pbskids.org/dontbuyit/], for example, children are urged to examine 'advertising tricks', think about how life differs from television and create their own advertisements. With some exception (e.g., Christ & Potter, 1998), media education is largely directed to primary and secondary students.

Understanding newscasts

An understanding of the production of newscasts informs aspects of their construction, and thus, potentially how they are eventually understood. Newscasts are produced under time pressure, are targeted for specific audiences and are made for commercial purposes under industry guidelines. Productions are created by teams of specialists, ranging from directors to reporters to camera operators, and must be edited to meet strictly timed slots (Bignell & Orlebar, 2005).

Television productions, of course, are not "ordinary, familiar" versions of reality but rather particular views of the world constructed through sophisticated textual devices (Bignell & Orlebar, 2005, p. 5). Professional works use variations in shot composition, pacing, variations in lighting and special effects to produce a unique *tradecraft* (Armes, 1988). A shot, or a segment that contains a "single, uninterrupted sequence of film taken by a single camera" (Wetzel, Radtke & Stern, 1994, p. 113) is the primary basis for tradecraft. A shot can be analysed for its content, composition or movement or perhaps the way references other elements within the production. Variations in shots can be used to signify differing meanings (Berger, 1998). A series of related shots create a scene; a coherent set of scenes make an entire production.

Information dissemination is the prime function of sound in television, according to Zettl (1990), through forms of speech, which consist of 1) dialogue, 2) direct address, and 3) narration. Dialogue helps to develop characterisation, a plot, or the context of an event in television. Direct address allows someone on-screen to speak directly to the viewer-listener, creating an optimal method for information exchange. Narration is either on or off-camera and is used to bridge gaps in the continuity of a screen event. Visually, too, productions have 'narrative structure' that can be mapped to display their construction (Graddol, 1994).

Well-crafted newscasts carry both denotative and connotative meanings; they are dense with symbolic meaning and act as a catalyst for multiple interpretations (Graddol, 1994). Although educational research on images is maturing (cf., Rose, 2007), an observation by Kress and van Leeuwen (1996, p. 8) a decade ago still rings true: "The problem we face is that literate cultures have systematically suppressed means of analysis of the visual forms of representation, so that there is not, at the moment, an established theoretical framework within which visual forms of representation can be discussed." One way forward is to examine the nexus between media and computer technologies.

In a three-part categorisation, Kozma (1991) frames media as an integration of technology, symbol systems and processing capabilities. From the start, Kozma minimises any role technology may play in instruction. The physical or mechanical components of a medium, he argues, serve only to determine its function and provide a convenient way to classify the presentation of a medium, for example, as 'radio', 'television' or a 'video'. Based on Salomon (1979), Kozma's highlights 'symbol systems' that is a phrase used as a "convenient generalisation for such terms as modes of presentation, modes of appearance, representational systems, or presentation modes" (Wetzel et al,1994, p. 181). Kozma argues that media differ in the ways they represent information and, because of this, affect how the knowledge they transmit is eventually understood. The processing characteristics of media may also affect comprehension. Because information is not held in memory but is active in the learner's mind, a learner may need to recourse over a section of text to recover from comprehension failures (Kozma, 1991).

It is unclear how audio and visual streams of information compete and collaborate as learners attend to dynamic visual media (Schnotz, 1993; Kirby, 1993). In a recurrent finding, information gained in the visual channel is more likely to be remembered than information gained from auditory input in what is now widely known as the "pictorial superiority effect" (Levie, 1987, p. 32). As Anderson (1995, p. 231) explains, visual information may be held longer in memory "since visual information necessarily comes from our direct experience whereas linguistic information can communicate experiences we may never encounter."

Kirby (1993) provides a useful conceptualisation of ways foreign language learners may experience difficulties with digitised news broadcasts. In regards to interference, for example, a student of Japanese may have to consciously process words, phrases or images themselves that may hinder the comprehension process. Mismatches between the verbal and visual narratives may also strain attentional and working memory resources, leaving little space for aural comprehension. Whereas native speakers may recover quickly from comprehension failures, foreign language learners may be 'led up the garden path' by misinterpreting a key element of a newscast (Gruba, 2004; Jones, 2006).

If the two channels closely relate and are well-integrated, however, they act collaboratively to assist comprehension. Visual materials, for example, may help by illustrating abstract concepts in concrete terms. They may also offer the learner an opportunity to construct a mental model that may otherwise by difficult to garner from text alone. Of particular relevance to foreign language contexts, visual materials "may offer some benefits to learners with lesser skills, abilities, or prior knowledge" (Wetzel et al., 1994, p. 62). Table 1 provides a summary of visual elements.

Table 1: Visual elements in a newscast

Element	Definition	Examples or comments
Shot	A single, uninterrupted sequence of film taken by a single camera	Wetzel et al, 1994.
Shot type	Focus of shot	Berger, 1998: Establishing (EST), Medium wide (MW), Close up (CU) Extreme Close-up (ECU)
Scene	A related set of shots	Wetzel et al, 1994
Visual narrative structure	Schematic diagram of scenes to indicate location, duration and type of each shot	Similar to a tree diagram used in linguistic analysis (Graddol, 1994)
Tradecraft	Stylistic variations in newscast production	Shot duration, shot angle, shot type, intentional distortion, filtering, slow or fast motion, color saturation to influence visual effects (Wetzel et al, 1994)
Superimposed print (non-diegetic)	Print electronically placed atop shots	For titles, headlines, or captions to summarise or emphasise information
Embedded print (diegetic)	Visible print that appears as part of the image	Advertising, signs, books, traffic signs, posters
Voiceover (non-diegetic)	Off-screen narration	Provides continuity or commentary (Zettl, 1990)
Direct address (diegetic)	On-screen speech	Direct information dissemination (Zettl, 1990)
Sound effects (non-diegetic)	Manufactured or natural sounds	Audio compliment to screen events that heighten impact

Method

Applied linguistics researchers make use of direct observations, verbal report protocols and semi-structured interviews to investigate cognitive aspects of foreign language learning (Duff, 2007; Wigglesworth, 2005). Specifically, immediately retrospective verbal reports (Ericsson & Simon, 1984/1993) are seen to be an appropriate method. In this approach, learners 'think aloud' within seconds of pausing digitised material to provide insights about what they have just seen.

Materials

To provide continuity in an ongoing series of studies, the current investigation used digitised Japanese (NHK) television newscasts were employed in a previous investigation (Gruba, 2004). The clips had been

selected from several provided by the Japanese instructors who had confirmed the texts' appropriateness in both content and level of difficulty. Based on suggestions by Joiner (1990), the selected newscasts did *not*

- show disturbing news events,
- need extensive background knowledge,
- display any English subtitles or dubbing,
- appear amateur, but rather were professionally produced,
- last more than two minutes, and
- have the same level of difficulty.

In Newscast One, the discovery and subsequent investigation of millions of Japanese yen that were found in a rubbish tip was the topic. Newscast Two concerned the tragic death of an elderly pedestrian who was struck accidentally by an automobile near a rural Japanese lawn bowls ('gateball') club. Table 2 shows a sample of elements from these clips.

Table 2: Sample visual elements

Frame M28, Newscast One	Frame G4, Newscast Two	Frame G32, Newscast Two
Extreme close-up shot of bundled Japanese yen	Headline: 'Four injured by car accident at gateball field' (literally, 'Gateball field in car four people injured')	Caption: DEAD Inami Tochiro (80)

Comprehension tasks

In line with classroom practice, short-answer 'wh'-type tasks and cloze questions were developed. Task design was challenging: How can we 'test' the understanding of polysemic visual elements without describing them? Following Buck (2001), tasks were written to pertain more to the comprehension of the audio, rather than visual, elements of the newscasts.

Participants

After a series of recruitment visits to classrooms, ten tertiary students of Japanese (three males and seven females) volunteered to participate study. The volunteers were 'upper-intermediate' learners; that is, they were proficient enough in Japanese to comprehend the newscasts, but not so fluent such that their automatic processes caused them to skip through components during the think aloud protocols (Camps, 2003; van Someran, Barnard & Sandberg, 1994).

Procedures

After the purpose of the study had been explained, participants were directed to view the newscasts at a computer workstation. Participants were audiotaped as they 'thought aloud' in immediately retrospective verbal reports during the entire time they completed the tasks. A researcher sat in the room with the student, but was to the side computer workstation and out of direct view. No directions were given about how to manipulate the digitised clips or how respond to the tasks (e.g., whether to review sections of the newscasts or complete tasks in order). However, on occasion, students were reminded to keep talking. No time limit was set and repeated viewings were permitted. A brief semi-structured interview related to overall impressions concluded each session. Students were asked, for example, to nominate their most difficult areas of comprehension, rate the clips and think about how knowledge of the tasks may have influenced their understanding.

Data analysis

As recommended by qualitative research methodologists (e.g., Miles & Huberman, 1994; Richards, 2005, Silverman, 2004), a collegial process of analysis was undertaken. The researcher and an assistant listened, and re-listened, to each session to build up a thematic understanding of the role of visual elements. Eventually, however, the majority of recordings were set aside and insights from the four most articulate students were closely analysed: as pseudonyms, they are Hanna, Jonathon, Maree and Sandra. After a series of cyclical analyses, debates and clarifications amongst the researchers, a number of defensible themes emerged.

The role of images

Visual elements, of course, influenced the overall comprehension of the newscasts and played a role in task management. As with earlier findings (Gruba, 2004), the elements helped in the initial stages of comprehension, strengthened understandings when visual and verbal elements seemingly collaborated and confirmed key words.

Assisting understanding

It is important to note that visual elements represented just one of a number of resources that could be drawn upon to assist comprehension. These included, for example, familiarity with the specific genre (i.e. Japanese newscasts) and the conventions of 'tradecraft' and 'task wiseness'. Each student quickly identified the clip as a newscast with the appearance of the newsreader and the 'NHK' (Japanese National News) logo in the background. This visual clue then allowed them to exploit their understanding of the conventions of the genre to help them complete the questions:

> Hanna: even without listening we know that some people [were] hurt and it's something to do with the car...

> Hanna: I think the video's trying to trace back to where the incident [happened] from the fence and going to the tree

Secondly, participants used their familiarity with these newscast conventions to locate salient information, 'spell out' difficult words (in this case, *kanji* characters) or see that some information was to be emphasised:

> Maree: it also normally has [the location] up in the right hand corner so that might be the easiest way … but I can't read the kanji properly … I can tell some of the sounds so when they say … I can make the link that what they're saying is actually the place … the little red bit before where they had that someone had died

Further, visual elements served to prompt connections between elements that may not have been understood on the basis of aural input alone.

> Hanna: [I saw] rubbish [and] money so there's something connected between them

> Maree: [the car had] got wire in the tyre so you can guess that even if I didn't hear it properly I'd assume that he got killed by the car

Finally, where the participants' initial focus was on the *aural* rather than visual input, visual elements were used to confirm what had been understood.

> Sandra: having pictures there made it obvious that what I was hearing was actually true

> Maree: they've got the bundles of money and I heard it and that's why I was so pleased

From these comments, it appears then that visual elements can assist in the comprehension processes of foreign language learners. Seeing headlines, figuring out meaning by its place in the genre, making connections and confirming information all contribute to understanding.

Deleterious effects

Visual elements may be misleading, too. Jonathon, for example, formed the impression on the basis of the visual input in Newscast One that the injured people had all been traveling in the car (when, in fact, they

had been struck by the car), a mistake he was subsequently unable to recover from. Maree made a similar error, but corrected herself in repeated viewings:

> Maree: at first I thought that it meant that four people had died when they got hit by a car… later on I thought that it was only one

So, while the visual elements may be used to generate hypotheses about the structure of the narrative, these hypotheses need to be continually evaluated on the basis of the aural input, which remains the primary source of 'meaning' in this context. Additionally, participants felt that each newscast differed markedly in the amount of 'helpful' information visual elements provided; Newscast One was seen to provide less support than Newscast Two.

> Hanna: by looking at the pictures I couldn't understand what was going on... even after fifth time (Newscast One)

> Sandra: The visuals in [Newscast Two] were a lot more helpful than the visuals in the other one... if it wasn't in the title I wouldn't know there was four people involved in this accident (Newscast Two)

> Hanna: if it wasn't for the [pictures] I wouldn't have realised there was a car involved... (Newscast Two)

The relative salience of visual and aural information was influenced by their arrangement in the video clip. For example, in Newscast One, a headline and voice-over start with the first scene at the location of the incident; in Newscast Two, a superimposed headline appears even before the studio-based newsreader speaks. Analysis of audit trails showed frequent stops to read headlines; thus, the ability to read Japanese strongly influenced overall comprehension:

> Hanna: this [headline] I know all the words so it caught me when the first time I read and it give me some idea what the news is about

As a session progressed however, the relative importance of aural and visual elements shifted. Surprisingly, aural elements took on a much more prominent role after repeated viewings:

> Sandra: [I] didn't use [the visuals] that much... the first time I watched it I did ... having pictures there makes it obvious that what I was hearing was actually true... but when I was answering the questions I was much more concentrating on the words than the actual pictures...

> Hanna: I didn't look at the headline closely, definitely not the first time... just skim through the headline... maybe after the second or third time or maybe even later...

In the first example, the visuals were essentially only accessed for the initial viewing, mainly to confirm comprehension of the aural input. In the second instance, the nominated visual element (i.e. the headline) only became salient after repeated viewing. One of the factors shown to *undermine* confidence in what has been understood is a lack of congruence between aural and visual input.

> Hanna: it seems like they're going back to... look for evidence... it's weird because I thought it would be the police who's going to do those things...

> Maree: The earlier bit in the video was easier because they were showing pictures *that corresponded to the events which happened...*

The lack of confidence sparked some repeated searches, or an intensification of effort. Perhaps surprisingly, however, some participants such as Jonathon felt so distracted by visuals that he looked away at times to concentrate on the aural input. It is worth noting, too, that some students were unaware of their ability to exploit visual elements.

> Hanna: when you're watching a video clip you really concentrate on listening… but maybe we need to pay more attention on the actual image too because it give you clues about what the video's about. I didn't realise that before...

At times, visual elements can cause comprehension to go awry. Amongst these learners, poor understanding at the beginning can be reaffirmed by elements that are misunderstood. Doubts about the veracity of information can be compounded by misunderstandings, and this can lead to an overall faulty interpretation. Confidence of understanding can suffer, and this can lead to a struggle to recover from comprehension failures. The difficulty of understanding an element can vary, too, from clip to clip.

Task management roles

Analysis showed that visual features also played an important role in task management. Specifically, individual elements were used to 'signpost' specific information by providing visual (rather than semantic) cue that enabled learners to focus on productive areas of the clip. Thus, if they suspected something important was available in one area, they would locate a crushed wheel, for example, to search that area intensively. Repetitions surrounding signposted elements were frequent and intense.

> Hanna: I have to use that little heading… in order to get me back to listen where the place [is] … and when I was trying to find the location I have to go back to this headline…location on right hand corner … can read half of it… but it gives me an indicator of where I will focus on.

Further, marked semiotic elements were noticed. In one of the captions, the color red is used around a word to signify death:

> Maree: the little red bit before where they had that someone had died… if I listen again I might be able to work out exactly what it was … I can make the link that what they're saying is actually the place… because I just know that on Japanese television that the place name is up in the right hand corner.

Overall, identification of generic elements (e.g., a newsreader in a studio) seemed to initiate expectations. The learners quickly projected ideas of what they thought would happen next. From this point, they sought to confirm their ideas through specific visual elements and sporadic attention to spoken language. Once a strong 'macrostructure' was set, they then attended more closely to the spoken words, using these to confirm or disconfirm their overall understanding. Thus, the role of visual elements shifted in importance and influence as comprehension progressed.

Summary and discussion

In summary, visual elements in digitised newscasts influence foreign language comprehension in both assistive and deleterious ways. Benefits afforded by the presence of visual elements include:

*   Rapid identification of genre and source act as a catalyst for initial understanding;
*   Assistance with the prediction of spoken elements through association of meaning, particularly when related to items that were designed to test information extraction;
*   Confirmation of tentative interpretations of aural elements at both the local and macrostructure levels of decoding;
*   Non-diegetic language elements, such as headlines and captions, provide assistance in comprehension, prediction, and verification when correctly decoded;
*   Familiarity with tradecraft can assist comprehension, prediction, and verification of aural elements;
*   Assistance with task management as images can 'signpost' areas in the newscast where key information is encoded.

Deleterious effects to task completion caused by the presence of visual elements include:

*   Misunderstanding caused by unfamiliar images that lead to faulty interpretations;
*   In the case of non-diegetic language elements, such as headlines and captions, incorrect decoding may distract, frustrate or cause overall misunderstanding;
*   Interference caused by a lack of synchronisation between visual and aural elements;
*   Poor comprehension development caused by the non-sequential arrangement of temporal events in the visual narrative structure (that is, when shots from latter events are presented in advance of initially-occurring events).

What are the implications of these findings? For classroom teachers, one goal would be to try to heighten successful comprehension and minimise misunderstandings. Instructors can do this in several ways.

First, it is clear that students need to have a strong understanding of the generic conventions of a newscast. Undoubtedly, the learners have seen hundreds of news clips prior to coming to the classroom, but they may not have thought about how news clips are constructed. In the case of Japanese (NHK) productions, pointing out the importance of non-diegetic information such as headlines and captions is very important. Written information is used extensively to clarify meaning in Japan; students will have to be made aware of salient key *kanji* characters are to message decoding. Unfortunately, there is no easy way to learn hundreds of such characters that are required for basic media literacy skills in Japanese.

Teachers can also help students learn essential background information that can help students understand the *visual* aspects of a foreign culture. In these clips, students were unaware that Japanese farmers wear white boots, for example, or that *gateball* is a game much like croquet. Lessons could be designed around authentic advertising materials, recent news clips and popular dramatic shows. When paused, elements of the digitised video can be explained and analysed in the context of the overall visual narrative. Doing such exercises on a regular basis could sensitise learners to look for clues to understanding that are likely to exist in the visual environment.

Another technique is to scaffold. Here, guided exercises could introduce students to habituate regular and systematic strategies to media comprehension. What does this element mean, or this one here? How are they related? What is likely to be said in this type of context? Still 'screen shots' could be printed side-by-side transcripts of clips as a way to point out connections in the materials. Gradually, the teacher would minimise scaffolded activities so that the student could learn to make careful attending, for example, part of their automatic set of comprehension strategies (Vandergrift, 2007).

Agenda for further research

Despite substantial differences in tasks and methodology, the results of the present study largely confirm results found in an earlier study (Gruba, 2004). Although, as Levy (2007) suggests, confirmatory research is needed in the area of computer-assisted language learning, how can we move ahead?

One improvement would be to utilise more subtle approaches to research. In this study, both the structure and high degree of correspondence between visual and verbal elements of Newscast One afforded a variety of 'opportunities' that made it appear to be 'easier' than Newscast Two. What particular elements, however, influenced such a perception? Was it the structure of the text or the individual elements that contributed most to this perception? To tease out such subtle differences, we need more sensitive recordings of interactions. Research facilities for studying human-computer interaction that include an ability to record learner behaviours, audit trails and verbal reports may be productive. The Usability Lab at the University of Melbourne, for example, can be used for computer-based foreign language investigations.

Without moving towards direct comparison, we need to investigate how differing language groups, learners and cultural backgrounds may influence results. Is it cultural familiarity or foreign language proficiency that plays a greater role in understanding media? For example, it would be productive to closely examine how different language groups (e.g., Italians studying Spanish; or Japanese learning Chinese) may see visual elements. Familiarity with a foreign culture is certainly a considered a base knowledge structure and may well be key developing media literacy skills in a second language. Larger, and more diverse, set of participants would also benefit fledging research in this area.

One final vexing area of further research concerns assessment. If we teach foreign language media literacy, how do we evaluate learning? At present, we know little about how to assess foreign 'multiliteracies' (Chun & Plass, 1997) or media literacy itself (Christ, 2004). As Chapelle (2001) argued, technology-mediated task design is a certain to remain a challenge. Here, paper and pencil tasks were presented, and these media allowed learners to view the tasks all at once (to enable a complete overview of set of questions) and frequent backtracking over tasks. They also gave students the freedom to look away from newscasts, if they wished, to concentrate on aural elements. Mishan and Strunz (2003) suggest an XML based approach that may yet prove to be fruitful.

Acknowledgements

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