11

MULTIMODAL STUDENT TEXTS

Implications for ESP

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11.1 Introduction

Multimodal texts are becoming increasingly prevalent in educational contexts (Kress 2000a; Molle & Prior 2008). Reading material for tertiary students has long contained a range of images, including tables, graphs, photographs and drawings. However, student writing is also becoming increasingly multimodal, with tables, graphs, flowcharts, drawings and photographs becoming the norm in student assignments. Because of this move to multimodality in student read‐ing and writing, it is increasingly desirable for English for Specific Purposes (ESP) to include the visual mode in teaching. This chapter uses the example of a multimodal student genre (the builders' diary, produced by carpentry students) to illustrate the need for such attention; it considers possible ways to analyse multimodal texts and ways that students can be supported in learning about how images may best be used to express meaning.

The builders' diary is a journal kept by professional carpenters to record the building work they do. This workplace genre has been adapted for educational use for carpentry trainees to provide a daily record of their learning. Figure 11.1 shows one such daily record.

This chapter builds on two studies of the builders' diary reported elsewhere. The first of these was an analysis of moves in the builders' diary (Parkinson, Mackay & Demecheleer 2018a), and included, as one move, the presence of pho‐tographs/drawings. The second study analysed the images in the builders' diary (Parkinson, Mackay & Demecheleer 2018b), employing a social semiotic analysis of visual meaning (Kress & van Leeuwen 2006). Social semiotic multimodal analysis considers images in the light of ideational, interpersonal and composi‐tional meaning, thus offering a complex and nuanced analysis of images.

Day 87

- Started working on the wall insulation.
- We used pink batts
- The wall insulation is different from the ceiling insulation, so we weren't allowed to use any leftover pieces from yesterday's work.
- Did the same steps as the ceiling insulation, measure, cut and fit.
- We used all the same PPE as the ceiling insulation.

FIGURE 11.1 A diary entry

I suggest implications for ESP teaching of multimodality and visual meaning in student texts, using the builders' diary as an example. To do so, I build on both of the above studies to consider the written and visual meanings in the builders' diary, as well as the achievement of coherence between written and visual meanings. In Section 11.2 I discuss prior studies of multimodality, with particular focus on how these studies integrate analysis of images and text. Following that, I draw on Parkinson et al. (2018a) and Parkinson et al. (2018b) to consider how written and visual meaning work together in a multimodal text. Finally, I reflect on implications for ESP teaching and ways to support student acquisition of visual literacy.

11.2 Expressing meaning in more than one mode

As noted above, educational genres are becoming increasingly multimodal. A study showing the extent of this growth is Bezemer and Kress (2009) which studied images in English textbooks from the 1930s to the 2000s. Their study showed an increase from almost no images in the 1930s texts (0.03 per page) to 0.74 images per page by the 2000s. Other studies of visual meaning in educational reading material include Jewitt's (2002) study of a novel reconfigured in CD-ROM form, and another of visual meaning on the World Wide Web by Maier, Kampf and Kastberg (2007). These studies suggest that students are increasingly exposed to visual meaning in texts. Visual meaning is also used in academic spoken genres, including classroom presentations (Wilson & Landon-Hayes 2016) and lectures (Morrell, Garcia & Sanchez 2008).

Analysts have noted the difficulties associated with integrating interpretations of visual and written modes. For example, Carter-Thomas & Rowley-Jolivet (2003) consider conference presentations from three perspectives – lexicogrammatical analysis, moves analysis and visual semiotic analysis – but without integrating their three analyses. Hiippala (2014) too notes the difficulty of integrating linguistic and visual interpretations: for example analysis of linguistic mood and interpretations of visual mood as indicated by choices such as camera angle.

A study that considers how written text and images work together to make meaning is that of Taboada and Habel (2013), who used Rhetorical Structure Theory to consider rhetorical relations, that is, coherence between text and

image. They used a corpus comprised of three genres: newspapers, research articles and scientific magazines. They found that in most cases the image was secondary to the written text: it could be deleted while still maintaining meaning. In their scientific magazine sub–corpus, the most common image–text relationship was that the image restated what was described in the text. In the research articles, elaboration on the text by the image or providing evidence was common. In the newspaper, elaborating on text or preparing readers for the written article (e.g. an initial photograph) were the most common functions of images.

Interestingly, Taboada and Habel (2013, p. 82) found that images often stand in multiple relationships to the written text, with more than one part of a written text stimulating reference to an image; thus, linear processing of documents cannot be assumed. Readers scan back and forth between text and image, and an image may be examined multiple times. The meaning taken from images each time may differ and the image may be related by the reader to different parts of the text each time, making the rhetorical relations between the image and the different parts of the text different.

A number of studies have used Kress and van Leeuwen's (2006) social semiotic tradition of multimodality to consider intersemiotic relations, that is, how images and text work together in making meaning. Much of this work has focused on conjunctive relations between images and text, or how the image and text relate to each other. Van Leeuwen (1991) is an early proponent of intersemiotic relations. He used Halliday's (1985) analysis of the role of conjunctive relations in writing or speaking, which can involve elaboration (two clauses are linked, with the second providing more detail), extension (the second clause adds information to that in the first) or enhancement (the second clause adds circumstantial information about cause, location etc.). Van Leeuwen (1991) extended this analysis of conjunctive relations between clauses to consider conjunctive relations between text and image.

Building on van Leeuwen's (1991) work, Martinec and Salway (2005) discuss semantic linkage between images and written text, noting how one semiotic resource (image or text) can elaborate the other by restating or clarifying it. A semiotic resource can also enhance another: for example, an image can provide information about how, when or where an incident in the text happened. One semiotic resource can also extend the other by adding information. Unsworth and Clerigh (2009) note, however, that this description does not adequately account for the reciprocity between the affordances of image and text; one semiotic resource does not necessarily enhance the other, as the potential exists for mutual enhancement.

Martinec and Salway (2005) further consider, as Halliday (1985) does in relation to text, whether image and text are of equal or unequal status. In Halliday's system, clauses are of equal status when they can stand alone grammatically, or of unequal status when they cannot stand alone. Extending this, Martinec and Salway (2005) regard image-text status as equal when the whole image is related to the whole text. Practically, however, this is difficult to implement, because they view 'whole text' as ranging in length from a paragraph to a sentence, or

even to a single word (p. 347). In order to judge the whole text as relating to an image, all verbs ('processes' in Halliday's terms) in the text must relate to the image. For example, in Figure 11.1, from our builders' diary data, all verbs in the first, second and fourth bullet points relate to the image. They show how the carpenter 'started' working, 'used' pink batts and 'did' the steps of measure and cut. However, the third and fifth bullet points contain information about the previous day's activities, which is not shown in the image; in Martinec and Salway's terms, this would make the image subordinate to the text.

Just as an image is regarded by Martinec and Salway (2005) as subordinate to text when it relates to only part of the text, a text is subordinate to an image if it relates to only part of the image. An example is the written label 'Fixed' on drawing B in Figure 11.2 from a builders' diary. A problem with this analysis
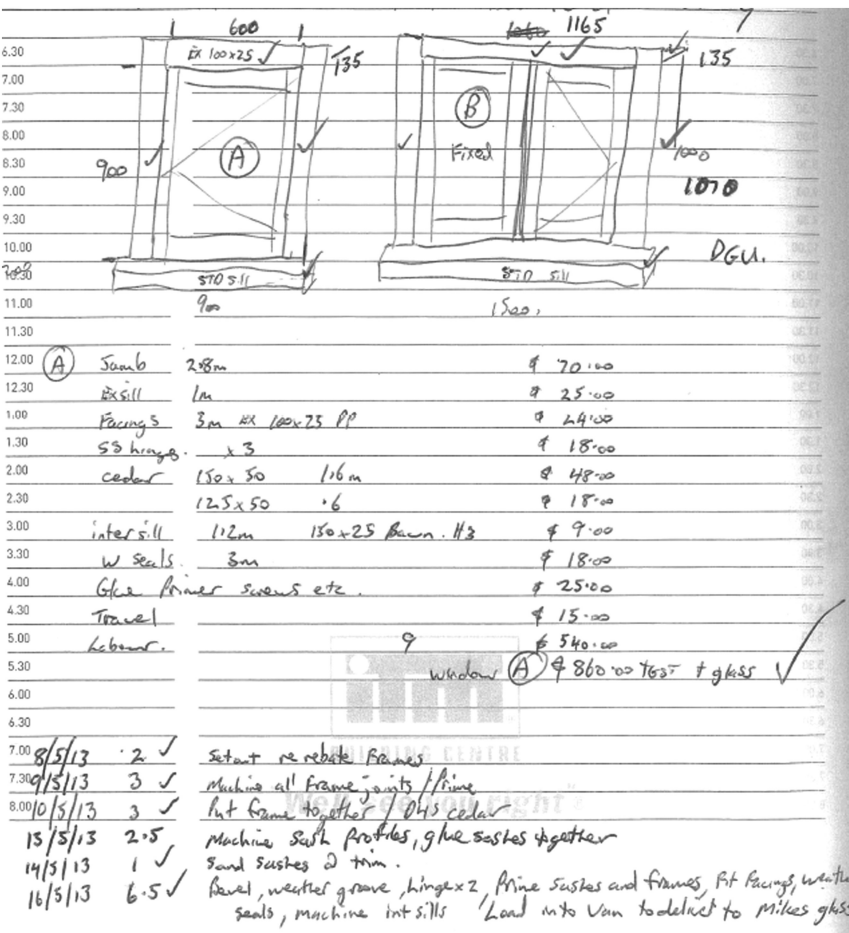

FIGURE 11.2 A diary entry with a drawing showing design of a window together with written costing of materials and a daily record of tasks to complete the window

is that not only does the text in Figure 11.1 show more than the image, but the image also shows more than the text does. In Figure 11.1, the image of the 'pink batts', the carpentry trainee measuring the pink batts, and the dry walls into which the pink batts have been fitted show information omitted by the text. By allowing the viewer to visualise what the pink batts look like, where the pink batts are placed and how they insulate the walls, the image allows the viewer to visualise context and gain a deeper insight into the process being discussed. On the other hand, the text in Figure 11.1 explains what the image cannot explain, the details of the type of insulating material and the process employed in fitting it. Thus, the visual and written mode work together to create more than either mode can do alone.

Of relevance to the problem of how to analyse not only coherence between text and image but also meaning in images in the builders' diary is Martinec and Salway's (2005, 347) approach to identifying the semantic meaning of images. Drawing on Kress and van Leeuwen (1996), Martinec and Salway (2005, 356–357) categorise images as narrative (depicting an action of some kind) or conceptual (showing the attributes or identity of an item being depicted). For example, in order to identify the meaning of an image, a viewer might analyse the image in Figure 11.1 as a narrative image where what is happening in the image could be expressed through action-focused verbs such as 'the builder *is measuring* the pink batts for wall insulation'. Conceptual images, in contrast, would typically be realised by the verb *to be* or *to have*. For example, the drawing in Figure 11.2 is analytical, showing the attributes of the window, its shape and size etc. This image might be realised in words such as 'the window *has* a windowsill' or 'the window frame *is* 600mm wide' etc. However, a problem for the analyst is that the identification of images as narrative or conceptual depends to some extent on the viewer's subjective identification of the meaning of the image. Does the viewer read the image as showing an action (narrative), identifying what something is (classificatory) or showing the attributes of something (analytical)?

Language and visual modes have different affordances, what Kress (2000b) calls the functional specialisation of text and image. Kress (2000b, 195) points out that text and image 'start from different concerns, are embedded in distinct ways of conceptualising, thinking and communicating' (195). Thus, Kress (2000b) notes, trying to 'translate' or 'verbally paraphrase' (Kress & van Leeuwen 2006, 64) an image into words can give only a limited idea of the image. For example, the image in Figure 11.1 can be verbally paraphrased as 'the carpenter measures and cuts the pink batts', but this omits a wide range of information contained in the image, including the placement of the pink batts in the dry walls, and the need to wear protective gear when working with pink batts. Kress discusses too how an image that he analyses from a textbook (Kress 2000b, 197) can 'represent the core information in this bit of the curriculum'. Thus, a single image can overview and unify a relatively larger piece of text while, in contrast, the language can provide details of events and actions.

In summary, the discussion in this part has shown how coherence between image and written text is achieved. It has noted the different affordances of image and written text in expressing meaning: for example, how a single image may relate to more than one part of the writing in the text. It has noted, too, the 'fuzziness' of meaning in images: the difficulty of 'translating' the meaning of an image into words. In the next part, I focus on the builders' diary as a multimodal text. Before suggesting implications for ESP teaching of multimodality and visual meaning in student texts, I begin by considering the prior work on builders' diaries by our research group: first, our move analysis of the builders' diary (Parkinson et al. 2018a) and, second, our analysis of images in the builders' diary (Parkinson et al. 2018b).

11.3 Realisations of textual meanings in The Builders' Diary

ESP has a long history of supporting student writing through a focus on the typical meanings and rhetorical strategies employed in student genres. Move analysis, initially introduced by Swales (1990), is the analytical tool used by ESP practitioners to identify these typical meanings and rhetorical strategies. Move analysis involves semantic and functional analysis of meanings (Biber et al. 2007). It investigates a text's communicative purpose (Swales 1990): the message that writers are trying to communicate to readers. Analysts also investigate the social purpose of genres (Miller 1984; Schryer 1993): what the genre seeks to achieve in the real world. Also of interest to move analysts is what is recognised by readers of a genre as persuasive ways of expressing and organising the message. In the student builders' diary this is likely to include not only convincing written explanations of building work, but also drawings and photographs.

The communicative purpose of the builders' diary is to explain and describe the building work that was done. As noted above, the diary is a professional genre which has been adapted for educational use. Figure 11.1 shows a typical entry by a trainee carpenter, while Figure 11.2 shows an entry that is much closer to the diary entries of professional carpenters. Multiple purposes are served by the diaries in these two contexts, as became clear during interviews with six experienced carpentry tutors. Diaries serve as evidence for assessment purposes that the trainee can do the job, and are also useful for the trainee's own future reference. The diary engenders the habit of recording hours for billing and of recording building work daily. It also serves as proof for future employers of the capabilities and experience of the writer. The record of work done may also be useful as evidence later in case of a dispute.

Parkinson et al. (2018a) report on a move analysis of builders diaries written by carpentry trainees at a vocational institution in New Zealand. Moves were identified through analysis of 20 1100-word diary extracts written by trainee carpenters. These 20 diaries were selected as having been judged by the students' tutors to be most proficient (out of the 55 diaries collected). Proficiency was judged by the tutor-identified criteria of: ability to describe materials and tools

accurately, ability to describe what was done and how it was done, ability to use technical language appropriately and include drawings and photographs in the text. Daily diary entries ranged from a few words to several hundred words in length, being typically about 75 words long. Figure 11.1 shows a typical daily diary entry.

We identified three obligatory moves[1], some of which were realised by a range of strategies, which are outlined in Table 11.1. Moves were regarded as obligatory if they were found in 80% or more of texts. As can be seen in Table 11.1, we included photographs and drawings as Strategy 5 of Move 3, detailing building work (used by all but one of the 43 diaries in our sample). Move 3, Strategy 6 reflects methods writers use to make explicit links between the visual and written mode, using either titles or labels for images. An example of a title is 'Hauling frames from point A to point B', used for a photograph of carpentry trainees moving the wooden frames for the house they were building; an example of a label is 'Fixed' on the drawing in Figure 11.2. This move reflects only explicit reference to images, rather than any overlap in meaning expressed by written text and image.

A limitation of the move structure in Table 11.1, however, is that it treats the use of photographs and drawings as a structural element rather than a rhetorical element. It does not consider the meaning of each image and the communicative and social function each serves. Thus, it goes against a key aim of move analysis, to 'identify the function of each segment in context' (Biber et al. 2007). A further problem is that this analysis assumes that all photographs and drawings, that is, the visual mode as a whole in the builders' diary, serve a single function:

TABLE 11.1 Rhetorical moves and their frequency (adapted from Parkinson et al. 2018a)

Move 1: Setting the context

Strategy[2] 1 Detailing date/time of day
Strategy 2 Detailing location
Strategy 3 Identifying work as a stage in a sequence
Strategy 4 Detailing the social context (team/tutor/employee/suppliers/subcontractors)

Move 2: Detailing materials and equipment

Strategy 1 Detailing materials
Strategy 2 Referring to tools and equipment

Move 3: Detailing building work

Strategy 1 Detailing Task
Strategy 2 Detailing Method
Strategy 3 Detailing Purpose
Strategy 4 Detailing Regulations
Strategy 5 Detailing work with photograph or drawing
Strategy 6 Referring to photograph or drawing
Strategy 7 Detailing Measurements
Strategy 8 Detailing instructions for the future

detailing building work. Although images in builders diaries do typically express meanings detailing the building work, they are not limited to this meaning, and can show meanings concerned with the building context as well as materials and equipment (as in Figure 11.1). This conflation of visual mode with function of images is not a useful analysis of the role played by images in these texts. Parkinson et al. (2018b) analysed the images in the diaries, aiming to remedy this problem, with this study described in Section 11.4.

11.4 Visual meaning in The Builders' Diary Genre

In Parkinson et al. (2018b), we analysed the images in 43 builders' diaries. Our data set included 1739 images: all the photographs and drawings embedded in a 2000-word segment of each of 43 diaries. Our analytical framework was based on Kress and van Leeuwen's (1996; 2006) grammar of visual design. This concerns the three 'metafunctions' of ideational meaning (what the image is about), interpersonal meaning of images (relationship between viewer and producer of the image and also between viewer and image) and compositional meaning (spatial organisation of images with regard to other images and text).

The study produced some interesting findings relevant to ideational meaning, which concerns content meaning. As discussed above, Kress and van Leeuwen (2006, p. 56) consider ideational meaning in narrative images and conceptual images. As it relates to what is being depicted, ideational meaning is closest to move analysis in Kress and van Leewen's (2006) system. Parkinson et al. (2018b) found that images in the diaries of experienced and novice trainees differed in that novices included far more images in their diaries, and the images included were more likely to feature people (themselves or fellow trainees) engaged in the building work; examples are Figures 11.1 and 11.3. This finding is of relevance in that by including their fellow trainees the social context is depicted (Move 1 in Table 11.1) in addition to depicting the building work (Move 3 in Table 11.1). As a single image can carry a diversity of meanings, in this case relating to two rather diverse moves, this suggests that visual meaning cannot usefully be integrated into move analysis.

As discussed above, there is also a limitation in exactness of interpretation of what is happening in each image, leading to a degree of fuzziness in reading

Day 17

- We have completed the floor and are now onto the wall framing of the house.
- First we need to smooth out all the floor boards so the framing can sit nice and even on the floor boards. We used the belt sander to do this.

FIGURE 11.3 An image depicting context (Move 1) and task (Move 3)

images. A difficulty is that the 'verbal paraphrase' provided by different view-ers of any image will potentially be different, reflecting the subjectivity of the analysis. For example, in Figure 11.3, a verbal paraphrase might be 'wall fram-ing *was laid out* on the floor boards by the carpentry trainees', thus paraphrasing a visual material process, in which people are doing something with a material result, which clearly depicts Move 3, Strategy 1: Detailing task. Another verbal paraphrase might be 'the house *is being built* on the campus', thus depicting Move 1, Strategy 2: Detailing location. However, move analysis does not allow for double coding, further suggesting incompatibility between visual meaning and move analysis.

In addition to considering ideational meaning, Parkinson et al. (2018b) also showed regularities in compositional meaning. This is of relevance to ESP in that compositional regularities show the rhetorical devices and organisation of the message that were typically used by the carpentry trainees to express mean-ing visually in their diaries. One compositional regularity was that images were usually placed to the left of the page in what Kress and van Leeuwen (2006) call the 'given' or familiar position, with text to the right in the 'new' or less famil-iar position (see Figure 11.4 for example). This suggests that the visual mode was more familiar than the written mode, perhaps because students had already experienced the event depicted in the image. A second compositional regular-ity was that links, if any, between images tended to be spatial, showing how the parts of the building fit together. Other links between related images were tem-poral, showing steps in a sequence (see Figure 11.4 for example).
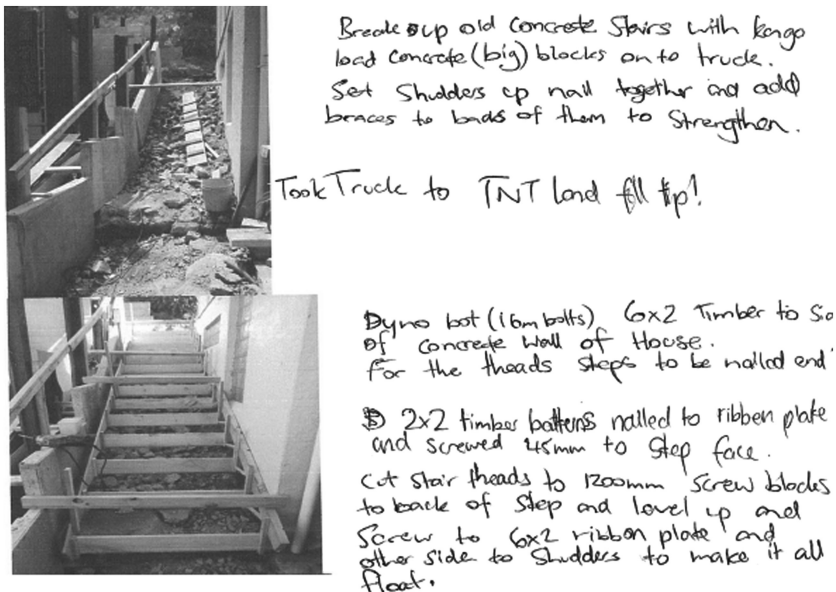

FIGURE 11.4 Images in a diary related sequentially

Another finding, which has importance for the present chapter, was strong evidence of meaning redundancy between image and text, with both displaying related information. This can be seen in Figure 11.4, where both images and text describe the removal of old stairs and the building of new ones. It is also seen in Figure 11.1, where the text and the image both relate to how walls are insulated. In general, image and text were found to complement each other, each doing what the other could not do as well; together they provided a fuller, more comprehensible account. Such redundancy was more pronounced in the diaries of novice trainees, still in their initial on-campus year. In the diaries of some of the more experienced apprentices, although both modes were employed, any particular meaning was expressed in one mode only, rather than repeated. As one example, the sketch in Figure 11.2 shows the design of what is being made in the job, together with measurements. As can be seen, none of this information is repeated in the written text, which instead includes new information listing materials to be bought, the tasks that were performed and records hours worked.

In summary, this section has shown lack of overlap between move analysis and visual meaning in that a single image can relate to more than one move. However, strong coherence in the multimodal builders' diary texts was created by redundancy of meaning between images and written text, with each mode partially repeating the other, but with the combination of modes doing more to create meaning than either mode could do on its own. Coherence was also promoted by spatial and temporal relationships between images.

11.5 Implications for ESP teaching

The discussion above suggests that visual meaning cannot usefully be integrated into a move analysis in the way that we attempted in Parkinson et al. (2018a), because a single visual element can carry the meanings of more than one move. Thus, visual expression of meaning must be considered in its own right in the ESP classroom. However, as the discussion above has shown, coherence between written and visual meaning is likely to be a fruitful focus for the ESP teacher. In this section I outline suggestions for teaching visual meaning in the ESP classroom.

A valuable focus for the ESP classroom is raising students' awareness of a genre's rhetorical conventions with regard to visual meaning. In Kress and van Leeuwen's (1996) framework, text or image that is placed left of page is viewed as 'given' or familiar, while those on the right are 'new' (p. 186), which reflects the left-to-right way that a text is read in the western tradition. For example, as discussed above, Parkinson et al. (2018b) found that student writers of the builders' diary usually placed images to the left of written text (as in Figure 11.4), suggesting that student writers viewed the image as given/familiar and the written explanation as new/less familiar. As there was also a sizable proportion of images

placed to the right of written text in our corpus (e.g. Figures 11.1 and 11.3), it is clear that there is no one 'correct' organisation. However, by being made aware of the convention that given/familiar material be placed first, followed by new material, student writers can become more deliberate in the visual organisation of their texts.

Related to this, in Kress and van Leeuwen's (1996, p. 193) framework, an image or text placed at the top of the page is in the 'ideal' position and an image or text at the bottom of the page is in the 'real' position. Thus, in the builders' diary, placement at the top of the page indicates the diary writer's view of that image/text as the ideal, and the image/text at the bottom as the real. In Figure 11.2 we find a sketch of the building work to be done at the top of the page in the 'ideal' position; this sketch, being made at the planning stage, is the writer's conception of what the end product will ideally be. The work that was actually done is recorded at the bottom of the page, in written text in the 'real' position; here we learn that, in order to make the ideal conception in the sketch into reality, the carpenter 'set out re rebate frames', 'machined all frame joints', and 'put frame together'. Again, awareness of this ideal/real convention is of value in the ESP classroom for students producing multimodal texts.

Also important is raising students' consciousness of the need for coherence between visual and written meaning. Depending on the genre of the text, its purpose and audience, there is a need for some meaning redundancy between written text and images. For example, in student texts to be read by instructors, this need goes beyond explicit titles and labels (such as 'fixed' in Figure 11.2), to ensuring adequate explanations in words of elements such as tables and particularly of more abstract representations such as graphs.

A further way to support acquisition of visual literacy is to discuss with students how coherence between images can be achieved. Explicit classroom discussion of patterns of meaning relations between images, with examples, is likely to be useful to students. These meaning relations may include temporal meaning relations, where images show development in time as in Figure 11.4, which illustrates the breaking up of old stairs and construction of new stairs. Other meaning relations between images are spatial meaning relations which show how elements relate to each other in space; images may also relate to each other with one providing an overview and another showing a detail of that image.

As discussed above in relation to Kress (2000b), images can summarise a relatively larger section of text, thus serving a unifying function. This is the case with Figure 11.2, where the plan of the windows to be built is related to the list of materials and their prices immediately below, as well as to the itemised work that was done over a series of five days at the bottom of the page. Images can also express more than one discrete meaning. As discussed above, in Figure 11.1 the image not only details the task (Move 3, Strategy 1), but also the materials and tools (Move 2, Strategies 1 and 2), as well as the context of the task (Move 1), thus creating a more in-depth vision of the task than the written text alone.

11.6 Conclusion

Growth in multimodality in student texts makes it important for ESP teachers to support their students' acquisition of visual literacy. In this chapter, I have suggested that the rhetorical strategies associated with visual meaning need to be taught in their own right, most fruitfully in conjunction with more established ESP approaches that focus on text structure, such as move analysis. The affordances of visual and written modes are different, and written and visual elements work together to create something more than either mode could do alone. However, visual elements cannot fruitfully be viewed as structural elements in written text (as is the case in Table 11.1); instead, the meanings each image makes and the rhetorical conventions used to make this meaning should be considered. Most importantly, the ESP teacher should consider raising students' awareness of means of creating coherence between images and written meaning in their texts.

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Acknowledgements

Notes

1 Three further optional moves are described in Parkinson et al. (2018), but as these were rare I include only the obligatory ones in this chapter
2 Strategies (also sometimes called 'steps') are different ways of achieving a move

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