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Multimodality in English for specific purposes: Reconceptualizing meaning-making practices

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ABSTRACT

The rapid evolution from print-based to multimodal information has still not received sufficient attention from the field of English for Specific Purposes (ESP). This paper advocates the need to re-conceptualize ESP through multimodal practice for new opportunities of interactive learner engagement. For the purpose, qualitative, exploratory research was conducted on multimodal ESP practice carried out with post-graduate students at the University of Calabria in Italy. The study addresses the issues of how multimodal environments can affect ESP and how a multimodal assignment can influence learner motivation, engagement and awareness. A theoretical multimodal semiotic approach was combined with multimodal pedagogy to investigate the benefits of learners' engagement in creating artefacts with content-specific language, as well as developing awareness of their meaning-making processes. A questionnaire survey revealed learners' active involvement determined by intrinsic, extrinsic and achievement motivation of working in a multimodal environment. Learner artefacts showed their ability to produce content-specific language in specialized contexts of use and to creatively combine the linguistic elements with other semiotic resources. In their explanations of meaning-making processes, learners

further manifested their awareness of how multimodality can stimulate motivation in learning, foster critical thinking and decision-making skills, enhance natural and flexible language learning, as well as the use of prior specialized knowledge in switching between linguistic and other semiotic modes. The study suggests that ESP development can benefit more from a multimodal pedagogy which is grounded in the principles of learner-centredness, constructivist learning and social interaction compared to the traditional instructivist approach.

Keywords: English for Specific Purposes, Multimodal Pedagogy, Meaning-making Skills, New Literacies.

1. Introduction

In recent years, the increasing development of new technologies has witnessed an accelerating shift towards multimodal representations of knowledge and content. According to Kress (2003), “multimodality is made easy, usual, ‘natural’, by these technologies” (p. 5), which contribute to the social practice of meaning making. In this socio-cultural view, meaning is achieved through the interaction of multiple simultaneous semiotic modes that “can be realized in more than one production medium” (Kress and van Leeuwen, 2001, pp. 21-22). In this respect, Kress (2010) explains that “mode is a socially shaped and culturally given semiotic resource for making meaning” (p. 79).

As a consequence of the widespread use of multimodal representations, Kress (2000a) argues that “it is now impossible to make sense of texts, even of their linguistic parts alone, without having a clear idea of what these other features might be contributing to the meaning of a text” (p. 337). In other words, meaning making is not only dependent on the verbal system, but relies on all the interactions established between the whole range of semiotic modes represented and on the arrangements made by potential carriers of meaning, such as spatiality and visuality (cf. Kress and van Leeuwen, 1996).

While scholars interested in the phenomenon of multimodality have devoted attention to the specific role played by the visual semiotic system, they have also suggested the importance of investigating multimodal practice. Nevertheless,

Prior (2013) underlines that multimodal practice, which involves the *dynamics of situated semiotic activity*, has been considered a marginal issue by research scholars mainly committed to semiotic analysis.

Engaging in the practice of using multiple simultaneous semiotic modes for meaning making is, however, of fundamental importance for the development of new literacies which are made possible by new technologies. Nonetheless, Kist (2007) found only a few instances in which new literacies were blended with traditional literacy practices in the classroom as “the new literacies instruction that does exist often comes only out of the fortitude of lonely pioneers of new literacies” (p. 44). Educators are, thus, more oriented toward traditional practices in which literacy is considered a “largely fixed, individualistic and psychological ability” (Atkins, 2001, p. 11). This is mainly due to their lack of knowledge of virtual environments, or *affinity spaces* (Gee, 2004), where “learners ‘apprentice’ themselves to a group of people who share a certain set of practices [...] pick up these practices through joint action with more advanced peers, and advance their abilities [...] in carrying out such practices” (p. 70). On the other hand, when educators experience these environments, they are more likely to gain awareness of how new literacies can be better integrated into classroom learning (Lankshear and Knobel, 2006, p. 255).

In pedagogical settings, the multimodality era also has an impact on the teaching/learning of Languages for Specific Purposes (LSP). Kress *et al.* (2001) argue that “[...] learning can no longer be treated as a process which depends on language centrally, or even dominantly [...] learning happens through [...] all modes as a complex activity in which speech or writing are involved among a number of modes” (p. 1).

Nonetheless, multimodality has still not sufficiently attracted the attention of teachers and researchers in the fields of English for Specific Purposes (ESP) and English for Academic Purposes for (EAP). According to Prior (2013), “nevertheless, multimodality seems to have remained a somewhat peripheral area of ESP research [...] the dominant research questions continue to be questions of language forms in monomodal frames [...]” (p. 520). Despite ESP learners now belong to the *net-generation*, which is founded on the development of multiliteracies, educational policies widely “[...] continue to promote a linguistic view of literacy and linear view of reading” (Jewitt, 2005, p. 330).

This paper advocates the urge to revisit traditional learning practices in the light of the multimodality era in which ESP learners should be given new opportunities of *interactive engagement* (Smith *et al.*, 2005) in creating discipline-oriented content complemented by the development of their English language skills. Starting from the three key pedagogical aspects of learner-centredness, constructivist learning and social interaction, the paper first intends to shed light on the ways these can be fostered in ESP based on multimodality. It then highlights the importance of introducing web-based authoring tools to enhance ESP compositional skills employed to create multimodal discipline-oriented artefacts. Against this scenario, the paper reports on a research study in which new literacies instruction was practised in an ESP setting and offers insights into the benefits that learners drew from the experience.

2. Multimodality in ESP

While multimodality has mainly been treated as an approach to analysis, this paper addresses the issue as an approach to ESP learning, acknowledging the interplay of multimodality in learning processes and meaning making.

Traditionally, ESP education has focussed on the exploitation of specialized texts to deliver language information. This text-centred approach has been basically concerned with the development of reading comprehension skills and, more in general, with learners' language needs. Tailor-made materials have been generally designed for this purpose and activities have commonly taken the form of vocabulary and grammar exercises. In this perspective, ESP learners are seen as passive recipients of the purpose-specific language which they acquire through shallow learning (Bereiter and Scardamalia, 1985). In such a way, little or no learning takes place when learners encounter difficulties which can be attributed to factors, such as their cognitive skills, complex topic content or even to the verbal modality of content delivery.

ESP education professes a learner-centred approach in which needs, motivation, subject matter and content are integrated to foster those skills which are relevant for learners. It must, however, seek more appropriate ways in which learners can actively and naturally process and construct content-specific language.

First and foremost, this implies accepting the assumption that “knowledge is not passively received but actively built up by the cognizing subject” (von Glasersfeld, 1989, p. 182) and that this is accomplished according to specific needs. Following this constructivist view, ESP learners should be offered opportunities to engage in processes of *learning-by-doing*. For instance, they can be encouraged to mediate their actions via the creation of artefacts in environments which provide novelty-based motive for further exploration (cf. Ruschoff and Ritter, 2001). In this regard, it is worth stressing that “learners (of all ages) are naturally curious, seek optimal challenges, and enjoy activities that capture their attention” (van Lier, 1996, p. 99). According to Lajoie (2000), for instance, “changes in the availability and flexibility of technologies are allowing for greater creativity in the ways in which these technologies are used for education and training” (p. xvii). These diverse and flexible tools can add novelty-based motivation for further exploration of new creative modes of representing ESP content.

In the environments in which these tools operate, multimodality plays a key role in constructing and conveying content. Its practice in ESP contexts can thus be seen as adhering to the methodological principles of learner-centredness, constructivist learning and social interaction (cf. Lyster, 2007).

In a learner-centred perspective, prior knowledge plays a key role in meaning-making processes. In this, ESP learners have the advantage of being more equipped with prior knowledge. They have, in fact, already oriented their studies toward a specific discipline and have previously acquired subject knowledge which contributes to easing the cognitive load of learning a language for specific purposes. The advantage of having learners create their own content-specific artefacts lies in the flexibility offered by *technological affordances*, or the interactive resources provided to build language, alter meaning and to integrate new content with prior knowledge (cf. Marlowe and Page, 2005).

Furthermore, multimodal environments allow ESP learners to construct and interact with specific contexts of language use. In so doing, learners gain awareness of the linguistic elements they need in order to create appropriate contexts of language use and to complement these with their specialized content. Thus, self-reflective processes underlying the flexible construction and re-construction of language encourage ESP learners to use and improve their

language skills in multimodal environments, where they can advantageously combine their acquired content-specific knowledge with the greater creativity offered.

Multimodality, thus, engages ESP learners in a “complex process of sense making” (Jewitt, 2006, p. 258) which is based on the social interactions between language and the other semiotic systems represented. In this perspective, Guo (2004) suggests that:

Therefore, we ESP/EAP teachers and researchers need to take seriously the multimodal nature of meaning making in academic apprenticeship and professional life and refocus our research and teaching agenda to better prepare our students for their current and future academic and professional life (p. 215).

One crucial point on the ESP research and teaching agenda is the commitment to fostering active engagement in deeper learning processes. First and foremost, this requires that ESP teachers and researchers explore those environments (Gee’s *affinity spaces*) and technological tools which best support the integration of new literacies into classroom language learning to achieve specific pedagogical objectives.

While ESP strives to fulfil learner needs, so that specific academic or workplace purposes are successfully accomplished by learners (Orr, 2001), ESP instruction that “foregrounds students’ needs points to meaningful practice and meaning making skills for learners to assume responsibility for their own discovery and fulfilment” (Kimball,1996).

3. ESP meaning-making skills: learner authorship

The current virtual world is principally characterized by social networking communication, as well as by virtual environments. These empower users by allowing them to access Web 2.0 tools to create, author and publish their own multimodal texts, or any artefact produced with the support of representational resources, which contribute to an “orchestration of meaning” (Kress *et al.*, 2001).

Meaning making, however, must not be seen as “transmission, reproduction, or personal interpretation” (Stein, 2004, p. 109), but rather as a transformative process of creating and modifying input, remaking the representational resources in the process by taking advantage of “[...] the possibilities given to me by a mode of representation to make my meaning” (Kress, 2003, p. 2).

The opportunity of authoring multimodal texts by coherently integrating different digital media elements (texts, graphics, sound, animation and video) is becoming a popular practice among the net generation. The development of web-based authoring tools has drastically changed traditional ideas of authorship, as well as blurring the boundaries between speech and writing. Moreover, as agents involved in making meaning and producing multimodal texts, individuals can create their own texts according to their interest, or based on “a complex combination of the demands of the particular social occasion in which the text is produced [...]” (Stein, 2004, p. 106).

This social phenomenon has an inevitable impact on language education. In this respect, Royce (2002) points out:

If making sense of (and constructing) texts requires the ability to understand the combined potential of various modes for making meaning, TESOL professionals need to be able to talk and think seriously about multimodal communication because they need to help learners develop multimodal communicative competence (p. 92).

In this view, Kress (2003) warns that it is crucial to understand “[...] the meaning-potentials of the resources as precisely and as explicitly as we can” (p. 24), since these affect the way in which learners acquire the skills of reading, writing, speaking and listening in different second/foreign language contexts. It thus appears that revisiting the traditional ESP approach to language skills is also timely.

Over the past, ESP has mostly fostered the development of the language skill of reading print-based texts or monomodal specialized texts. Achieving reading comprehension was a matter of processing written texts by following what Kress (2003) defines “the logic of speech” which involves the principal factors of reading time and sequence. Nowadays, however, ESP teaching needs

to take the skill of reading multimodal texts into account. Reading strategies and skills that were once taught according to “the logic of speech” now need to be tailored to “the logic of image” (Kress, 2003) in order to focus on meaning conveyed through space, visuality and language simultaneously.

In the new media age, the conventions of writing have also been subverted. According to Jewitt (2005), “the new technologies emphasize the visual potential of writing in ways that bring forth new configurations of image and writing on screen: font, bold, italic, colour, layout, and beyond” (p 321) so that “writing is becoming ‘assembling according to designs’ in ways which are overt, and much more far-reaching, than they were previously” (Kress, 2003, p. 6).

In the ESP context, this (r)evolution appears to displace the power attributed to texts and to conventional methodologies of developing reading and writing skills. Learners become active authors of their meaning-making skills in a multimodal perspective. They can, in fact, “choose the most apt forms [...] to represent [their] meanings” (Kress, 2000b, p. 155) and, thus, hold the power of actively controlling, designing and transforming meaning (cf. Bull and Anstey, 2010).

As for spoken interaction, this as a skill, received almost no attention in the early stages of ESP development (Dudley-Evans and St. John, 1998), while later it was taught as a set of rehearsed “transactional exchanges”, which reflected the needs of specialized situational contexts (Thornbury and Slade, 2006). It is obvious that appropriate spoken interaction has to cope with improvisation and that developing good listening and speaking skills is a key aspect for appropriate performance. In multimodal environments, ESP learners have access to audio and visual semiotic meaning *in vivo* form (Royce and Bowcher, 2007) in order to handle the problematic area of improvisation. They also have the chance to access sophisticated user-friendly applications to construct specialized situational contexts and author spoken interactions according to their specific needs.

Thus, developing multimodal communicative competence now needs to be at the forefront of ESP. In this regard, Hampel and Hauck (2006) claim that:

In order to make meaning according to their interests and to engage in the remaking of resources and the design process, language learners will have to

become competent in both switching linguistic codes and switching semiotic modes and to do so consciously (p. 12).

Allowing learners to author their own artefacts shifts the ESP focus from a product-oriented approach to a process-oriented one, in which learners work toward becoming competent in interpreting and constructing appropriate meanings multimodally (Stenglin and Iedema, 2001) and in developing the use of integrated language skills, in relation to the other semiotic systems of communication.

4. A study on multimodal ESP practice

Multimodal ESP practice is a relatively new pedagogical issue and is, therefore, still fairly under-researched. For this reason, the present study attempts to contribute to understanding how multimodal technologies can open up new landscapes of ESP practice. Specifically, it reports on a case of multimodal ESP practice by adopting a qualitative, exploratory research approach.

4.1. Aim and Method

In the perspective of re-conceptualizing learning practices in the digital era, the aim of the study was to explore how ESP learners' skills were affected by the active practice of creating content-specific artefacts in multimodal environments. The research is based on the assumption that the pedagogical use of new multimodal technologies can support the basic features of ESP development, namely, learner needs, content-specific activities, language learning which is appropriately related to those activities and motivation (cf. Hutchinson and Waters, 1987).

In an exploratory approach, the following research questions were addressed:

1. How can multimodal environments affect ESP processes of meaning-making?
2. Additionally, how can a multimodal assignment positively affect ESP learners' motivation, engagement and awareness?

The methodological framework adopted was based on a multimodal semiotic approach to learning combined with a multimodal pedagogy. The multimodal semiotic approach supported the theoretical frame of the research, as it “[...] is *not* a framework for pedagogy but a reconceptualization of learning, which can lead to rethinking pedagogy” (Stein, 2008a, p. 877). On the other hand, the importance of introducing multimodal pedagogies lies in the fact that these “[...] acknowledge learners as agentic, resourceful and creative meaning-makers [...]” (Stein, 2008b, p. 122).

4.2. Participants

Seventeen Italian postgraduate students (six males and eleven females) participated in the research. All participants were first-year students attending the five-year graduate school in Clinical Pathology within the Faculty of Pharmacy at the University of Calabria in Italy. During a short preliminary discussion, held at the beginning of the 16-hour course, participants revealed they had a scientific background in either Pharmacy or Biology. They also all stated that they had attended compulsory ESP courses during their undergraduate studies at different Italian universities and claimed that these had mainly focussed on reading and translating scientific texts from English into Italian. The average age of the group (26.2 years) indicated them as members of the net generation. All participants, in fact, claimed to have a good level of computer literacy, especially in the use of popular Web 2.0 social networking tools, such as Facebook, but no experience with web-based authoring tools in multimodal environments. This confirms the view that the student level of comfort with technology is exhibiting a growing trend (McHale, 2005).

Multimodal practice was, thus, experimentally integrated into the first of the five modules of the ESP curriculum. Participants were informed that the purpose of the practice was to develop their multimodal communicative competence in the specialized field of Clinical Pathology.

4.3. Tools and Procedure

The multimodal ESP practice was supported by the free web-based video-making tool, available at GoAnimate.com, which offers users the chance to process meaning making by integrating elements pertaining to all the five semiotic systems (linguistic, visual, audio, gestural and spatial). In addition, its user-friendly interactive resources allow learners to take complete creative control of making meaning through simple drag and drop tools. In other words, the ease-of-use of GoAnimate was considered to avoid interferences with the learning process. In this regard, Selber (2004) emphasizes that “[...] good tools become invisible once users understand their basic operation” (p. 36). Moreover, video-making tools help increase *semiotic awareness*, whereby conscious attention is paid to all the modes through which meaning can be created.

The main procedural steps involved in designing the practice were: 1. the creation of a multimodal assignment; 2. the development of multimodal artefacts; 3. the self-explanation of meaning-making practices.

In the first step, a multimodal assignment was designed, based on the principle of learning through design (Kafai and Resnick, 1996), i.e., conceptualizing learning by creating artefacts. Specifically, the multimodal assignment required ESP learners to focus on the complex topic of blood fractionation and donation and create their own multimodal representations in GoAnimate. This topic was selected for two main reasons:

- 1) The diagnosis and monitoring of diseases through the examination of blood is a core activity in Clinical Pathology and in the areas of Haematology and Immunohematology (blood bank). The choice, thus, covered one of the group’s essential needs and specific purposes for learning English.
- 2) Learners had substantial prior knowledge of the issue, as they had already taken subject-matter modules during their current curriculum studies. Thus, this ensured that they would better cope with content-specific language, despite the complexity of the topic. The overall objective of the multimodal assignment was, therefore, to encourage learners to autonomously create authentic and meaningful artefacts and to experience themselves as competent and intrinsically motivated learners (Beichner, 1994). Subsequently, the assignment was designed to promote a *can-do* attitude and to stimulate critical

thinking, which are the keys to success in language learning and in this current information age.

In the second step, the development of multimodal artefacts mainly took place in a computer laboratory at the university in extra-curriculum hours (10 hrs.), which learners were willing to devote to training in the multimodal environment. Participants were initiated in the use of the basic functionalities of the multimodal tool and then required to plan multimodal content. In this regard, Wysocki (2004) points out that “composing a visual text (thus) involves choosing strategies for shaping what is on a page or screen to direct a reader/viewer/browser’s attentions, within the context of other texts” (p. 126). To this end, learners were required not only to plan the content of their artefacts, but also to creatively transform and integrate it in multimodal format to present an effective product, demonstrating their learning of content-specific language.

In the final procedural step, learners were asked to give brief explanations of their meaning-making practices, rather than first subjecting their work to a traditional evaluation. This pedagogical procedure is supported by the claim that “an analysis that only looks at what students write or say is likely to miss much of what students do and the meanings that they make” (Jewitt, 2006, p. 31).

5. Qualitative findings

Multimodal ESP practice was explored through the three key factors of learners’ *involvement, representation and awareness*.

5.1. Participants’ Motivation

Involvement was viewed as the extent of motivation placed in the practice, or the attention, effort and persistence manifested. Cognitive psychology suggests that three types of motivation, namely, intrinsic, extrinsic and achievement motivation influence L2 learning, depending on different individual traits and pedagogical settings. Kumaravadivelu (2006) explains that:

intrinsic motivation is the desire to engage in activities characterized by enjoyment [...] *extrinsic motivation* can be triggered only by external cues that include gaining and maintaining [...] specific tangible rewards [...] *achievement* motivation, on the other hand, refers to the motivation and commitment to excel (p. 40).

Data on participants' motivation was collected by means of a 12-item semi-structured questionnaire which was administered after the multimodal assignment was completed. The questionnaire was divided into four-item three-sub-scales, which correspond to the three types of motivation postulated by cognitive psychologists. Participants were asked to rate on a 5-point Likert-scale (strongly agree-strongly disagree) the extent to which each item represented their motivation in engaging in multimodal ESP practice. Data findings showed that more than one type dominated learner motivation at the same time (Table 1).

In participating in this experience, I felt I:	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
<i>(Intrinsic Motivation)</i> 1. had fun in learning 2. engaged in learning the use of technology 3. met new learning challenges 4. stimulated my curiosity	1 7 9	6			
<i>(Extrinsic Motivation)</i> 5. simply did the compulsory assignment 6. wanted to receive teacher approval 7. wanted to earn credits for my final exam 8. wanted to connect this practice to other social contexts	13	4	5	17	
<i>(Achievement Motivation)</i> 9. successfully complete the assignment 10. learned more and better 11. developed my self-esteem as a learner 12. received my colleagues' approval	10 6 1			14	

Table 1. Learners' Motivation in Multimodal ESP Practice

Nine participants strongly agreed that their *intrinsic motivation* was mainly based on curiosity; seven on the desire to meet new challenges in learning, while six agreed that they had enjoyed multimodal learning. The one participant left strongly agreed that she was more motivated to engage in the use of technology, justified by her weaker computer-literacy skills.

In addition, thirteen learners strongly agreed that their *extrinsic motivation* was driven by the external element of earning credits toward their final exam, while four participants also agreed that they were more motivated in receiving teacher approval. Consistently, all participants disagreed that they engaged in the multimodal assignment simply because it was compulsory.

In terms of *achievement motivation*, ten learners strongly agreed that they were cognitively driven by their perceived need of successfully completing the multimodal assignment, six by the cognitive need to learn more and better, while the one weaker student wished to develop her self-esteem as a learner. On the other hand, fourteen participants disagreed that their commitment to excel was motivated by the fact of receiving peer approval.

5.2. Participants' Representations

Representation referred to the concrete means employed for the production of content-specific language, manifested in the participant-generated artefacts. In the multimodal environment, learners were allowed to transfer their prior knowledge of the primary content of blood fractionation and donation in order to elaborate their own artefacts. In moving that knowledge away from the primary content area, learners were given the opportunity to develop mental models of the content and the content-specific language and to apply it elsewhere (cf. Spiro *et al.*, 1992). Individual processes of meaning making were made possible thanks to the features of the multimodal environment which supported learner control, freedom of choice of multimodal resources and learning in (pseudo) real-life contexts. Thus, the multimodal environment served as a platform, where ESP representational meaning was negotiated through “a process of selection, adaptation and transformation motivated by the interests of [learners] and the context of learning” (Jewitt *et al.*, 2001).

Learners' representational meanings produced for the multimodal assignment were subjected to qualitative analysis. Three criteria were introduced as indicators of learners' engagement in constructing multimodal meaning: 1. re-contextualization of content-specific language; 2. creation of new meanings through the use of different semiotic modes of communication; 3. creation of new identities for social interaction.

The resulting variety of multimodal representational meanings showed that learners engaged in the control of the meaning-making practice and in the choice of different multimodal resources, situating their ESP learning in real-life contexts (Table 2).

Analytical Criteria	Multimodal ESP Representational Meanings	N° Learners
Re-contextualization of content-specific language	Hospital, laboratory, doctor's office;	14
	academic lecture room/ conference venue;	2
	None	1
Creation of new meanings	Animated dialogues/monologues (integration of linguistic, visual, audio, gestural and spatial modes)	16
	Inanimated plain text	1
Creation of new identities	Amusing characters: funny doctors, patients, academics	16
	None	1

Table 2. Learners' Engagement in constructing Multimodal Representational Meanings

Sixteen participants contextualized the specific topic assigned within different pertinent contexts of language use. Settings were mainly represented as hospital environments, laboratories, doctors' offices, academic lecture rooms and conference venues. In these contexts, new specialized meanings were created by integrating elements pertaining to all five semiotic systems of communication. Communication was mainly created in doctor-patient or doctor-doctor dialogic modality or in speaker monologic modality in the case of lectures and plenaries. The underlying process first witnessed learners' involvement in the preparation of dialogic or monologic texts, thus engaging

their attention in the significance of different text types. This was further reinforced when learners were subsequently committed to crafting and editing content to transform it in audio mode through the support of the text-to-speech application available in the multimodal environment. In so doing, learners were allowed to choose the variety of English (e.g. American or British) they preferred and, therefore, were also working on their listening skills.

In addition, learners created new identities by projecting their agentive selves in the design of amusing characters which they animated through the use of gestures and movement. This process helped draw learners' attention to the need to appropriately combine elements pertaining to the linguistic, gestural and spatial semiotic systems. In particular, it provided a holistic approach to learning supra-segmental aspects of English, including rhythm, stress and intonation, which are often a problematic area in teaching, but not necessarily in learning (Laroy, 1995).

Overall, representations were a clear manifestation of learners' strong motivation, committed engagement and conscious awareness of ESP use. Multimodal learning was, thus, understood to be well accepted by the group as a social practice, even in the case of the one weaker student, whose simple static representation showed her self-determination to improve her language and computer skills.

Ultimately, participants' representations confirmed that new meanings, identities, and roles are made possible when learners are able to express their ideas through multimodality (cf. Hull and Nelson, 2005). In this respect, it is worth taking the pedagogical value of this practice into further consideration, given the increasing popularity it is gaining in different social contexts (cf. Hull and Katz, 2006).

5.3. Participants' Explanations

The key factor of learner awareness was analysed through the recordings of the brief explanations given by participants during the presentation of their artefacts. Learners were required to provide explanations related to the three main points of *learning modality*, *language learning* and *prior knowledge*. This activity allowed learners to reflect on their meaning-making processes and share their

ideas with their peers so as to develop awareness of the potential benefits of multimodality in ESP (Table 3).

Key Aspects	Significant Learner Tokens	Main Benefits
Learning modality	<p>(1) <i>It forces you to think of the different ways in which meaning can be created and represented... should I choose this way or another more effective one.</i></p> <p>(2) <i>I really loved editing a poster of the human body which I put on the wall of the doctor's office next to his qualifications.</i></p> <p>(3) <i>I had fun dressing the female patient and deciding which hairdo and hair colour were suitable for the situation.</i></p>	<p>Learning in a multimodal environment is more reflective and motivating</p> <p>Learners are empowered with a creative control of making meaning</p>
Language learning	<p>(4) <i>I enjoyed making the old lady frown and wiggle in her chair when she didn't understand the meaning of blood fractionation.</i></p> <p>(5) <i>I went over and over the audio to see if my character was speaking correctly with the appropriate terminology.</i></p> <p>(6) <i>I didn't even realise how much language I was using to create my lecture on blood fractionation. I was busy thinking of which salient points the character had to make to be clear and effective for his audience.</i></p>	<p>Language learning takes place through all modes of communication, strategically employed to overcome difficulties with content-specific language</p> <p>Language learning as social interaction</p>
Prior knowledge	<p>(7) <i>I was lucky I already knew the basic concepts of blood transfusion and blood compatibility so I could concentrate on the language.</i></p> <p>(8) <i>Since the topic wasn't a problem for me, I spent more time working on how to create it in an original way.</i></p>	<p>Prior knowledge is crucial in switching to English and to other semiotic modes</p>

Table 3. Learners' Awareness of the Benefits of Multimodal ESP Practice

In terms of learning modality, participants developed awareness that multimodality allowed them to engage in a “complex process of sense making” by interpreting movement, image and colour (Jewitt, 2006, p. 258) (token 1). Learners further claimed they were empowered with a creative control of making meaning, thus indicating their intrinsic motivation in multimodal learning (tokens 2 & 3).

As for the key aspect of language learning, awareness of the contribution of all modes of communication to learning (Jewitt, 2006) was emphasized as a strategic way of overcoming problems which may be encountered with content-specific language (tokens 4 & 5). In this regard, learners’ awareness appeared to be in line with the view that “the longstanding focus on language as the principal, if not sole, medium of instruction can at best offer a very partial view of the work of communicating in the classroom” (Jewitt, 2008, p. 256). Learners also developed awareness of the importance of social interaction and of how ESP should be embedded in social contexts of use (token 6).

Finally, learners realised the importance of exploiting prior knowledge to create new meanings to complete their multimodal assignment. They developed awareness that recalling prior knowledge allowed them to concentrate more on the language, as well as on other semiotic modes of communication (tokens 7 & 8).

On the whole, explanations were beneficial in understanding that learners had become aware of a number of different aspects entailed in their meaning-making processes.

6. Reconceptualizing ESP practice

At this stage of the on-going research on multimodal ESP practice, it is still too early to draw any definite conclusions. Nevertheless, the small-scale research conducted on the experimental multimodal ESP practice solicits some noteworthy considerations related to the two research questions posed.

First, multimodal environments can positively support ESP processes of meaning making in at least the following three ways:

1. *learner-centredness*: this key aspect of ESP is strongly promoted by the non-linear design of multimodal environments, which have been found

to increase learners' control over the way they progress in meaning-making practices (cf. Karagiorgi and Symeou, 2005). Thus, learners can benefit from the different complementary processes of multiple representations: they have the freedom of choosing more than one strategy of communication, besides the opportunity of exhibiting their learning preferences (cf. Ainsworth, 1999);

2. *constructivist learning*: learners construct their own meaning by engaging in processes of manipulation and reconstruction of the primary ESP content given in order to create new content-specific language in new contexts of use (cf. Good and Brophy, 1994). Content-specific language is, in fact, meaningfully created as the result of interactive engagement in experiential learning (cf. Moon, 2004). Although language is the principle focus of ESP development, the other semiotic systems assist learners in making meaning through the interaction between visual, actional and linguistic communication (cf. Jewitt *et al.*, 2001);
3. *social interaction*: multimodal environments further ascribe a central role to learners by enabling them to actively produce language tokens in the context of genuine social interactions. In this, animation is a key component in driving learners to reflect on the underlying processes of creating ESP social interaction (e.g. choice of characters, roles, appropriateness of content-specific language). The variety of semiotic features, which are available for the creation of social interactions, induces learners to reflect on the number of potential alternative representational perspectives and to decide on how to negotiate meaning.

Second, the study has highlighted how a multimodal assignment can have a positive impact on ESP learner motivation, engagement and awareness. Following the suggestion that attention needs to be drawn to “the meaning-making practices and interpretive work of students” (Jewitt, 2008, p. 258), investigation was carried out by surveying learner motivation, analysing artefacts and learners' self-explanations.

In taking the case of creating video artefacts, the practice revealed untapped pedagogical potential in terms of contextualization of content-specific language, creation of new meanings and new identities. Besides fostering active learning

which stimulated intellectual inquiry and problem-solving, the multimodal assignment added diversity and flexibility to the often dull language-learning activities which are carried out in the traditional ESP classroom. The multimodal ESP practice was, in fact, acknowledged by participants as optimizing learning conditions in terms of intrinsic, extrinsic and achievement motivation.

Thus, rather than persisting in an instructivist methodology which privileges a text-centred approach, the study suggests that ESP development can benefit more from a multimodal pedagogy (cf. Stein 2000) based on *authentic tasks*, chosen to simulate those that are expected to be encountered in real-life professional domains.

In a constructivist view, the multimodal assignment facilitated more authentic learning in that abstract ESP concepts became more meaningful as they were connected to the performance of a concrete activity in which learners took responsibility for their own learning. They activated strategies to face the challenge of content-specific language by recalling prior knowledge and using other semiotic modes of communication, thus devoting greater attention to their ESP processes of learning.

In addition, the technique of self-explanations was introduced to encourage contemplation and assimilation of information (Brooks & Brooks, 1993). Allowing learners to self-explain their multimodal practices facilitated their understanding of their active engagement in an alternative learning space, developed their awareness of how the new learning modality enhanced their meaning-making skills and stimulated deeper reflection on creating and using content-specific language.

Viewing the ESP classroom as a multimodal environment calls for a reconceptualization of meaning-making practices. It could be argued that this practice may show its negative side in finding learners lingering in the amusing part of the assignment of video editing, rather than working on improving their language skills. Processes involving cropping, re-arranging and re-editing content can, instead, be considered in the positive light of the cognitive drive to negotiate meaning making in terms of decision-making and self-monitoring skills. When transferred to language improvement, these skills will prove extremely helpful. As Jewitt *et al.* (2001) clarify, “we are not suggesting that the linguistic realisation of meanings is no longer important, we are, however,

suggesting that the visual realisation of meaning is important. Learning can no longer usefully be considered to be a purely linguistic accomplishment” (p. 17).

On the whole, the rapid pace of change from print-based to multimodal representations of information urges an immediate response from language educators. First and foremost, this requires the will to re-conceptualize past practices, which should not necessarily be completely abandoned. It should, however, be acknowledged that implementing multimodal ESP practice is timely for learners who are now surrounded by a technology-saturated and an image-rich environment.

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