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Creating and reading images: towards a communication framework for Higher Education learning

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Abstract

This article offers theoretical underpinnings that can support an image-based communication framework for Higher Education. This framework targets students in higher education for the purposes of their productive engagement with curriculum content through visual materials and accompanying narratives. Its structure is presented in the concluding part of the article and arises from the reviewed literature throughout the article. Within this structure, blogs are suggested to serve the purpose of an image and narrative repository. The main argument in the article is that image-based communication provides a tool for externalizing students' process of concept understanding. That understanding is seen to surface while students create, explain in writing and then discuss the created images with their peers and teacher. In that respect, the suggested framework might provide a channel for expressing students' prior knowledge and cultural background alongside being an alternative way of communication method in Higher Education.

Keywords: image-based communication, understanding, concepts, Higher Education, students, teaching and learning

Learning and understanding with images

“Learning’ is, most often, figuring out how to use what you already know in order to go beyond what you currently think. There are many ways of doing that. Some are more intuitive; others are formally derivational. But they all depend on knowing something ‘structural’ about what you are contemplating - how to put it together. Knowing how something is put together is worth a thousand facts about it. It permits you to go beyond it.” Bruner, J. (1984, p. 183.)

In the extract above, Bruner points to the heart of learning: understanding what is being studied by using some structure for bridging prior learning experience with the new and ongoing one. This structure should help in new knowledge construction. One important strategy to support knowledge

construction is scaffolding. Wood, Bruner and Ross' (1976) notion of 'scaffolding' builds on Vygotsky's 'zone of proximal development' (Valsineer & Vanderver, 1997) and refers to a dynamic structure involving an interaction between the learner and someone more knowledgeable. The latter helps the former reach a higher level of understanding than that held at the moment of the activity. In metaphorical terms, the teacher 'scaffolds' the development of the student. This dynamic interaction in learning is not a simple happening; it has some form and structure which features action and response, judgment and assistance. This article attempts to offer a device around which a scaffolding encounter can be built, in this case a discussion and reflection triggered off by images. The term 'image-based communication' is suggested rather than 'visual communication' because 'communication' in this article implies conversation and verbal feedback triggered by the particular potential of specific images.

This article argues in favour of developing image-based communication in Higher Education (hereafter HE) and suggests a possible framework for such communication. The framework appears at the end of the article in the form of a conceptual structure and a list of constituents building on the reviewed literature that supports it.

First, the article provides theoretical underpinnings that relate to the general importance of images in communication and then to their more specific importance in HE. It goes on to provide further theory and research informed examples that support the importance of an image-based communication framework with sections on: understanding and learning experience, creative multi-cultural communication, communicating concepts through images and narratives, and suggesting a platform for that communication - blogs. The article finishes with a possible framework for image-based communication in HE, acknowledging the challenges within it.

Communication as the main marker of human cultures

The primary concern of human culture could be defined as 'the production and exchange of meanings between the members of a society or group' (Hall, 1997, p.2). Every person carries certain cultural specifications when entering any form of communication, and university communication is no exception. Culture is seen as a set of signifying practices (Hall, 1997). That means that whatever we do, there is some meaning behind it. The production and exchange of such meanings is realized through different communication means/modes (Hodge & Kress, 1988, p.1). Communication resources are human-made artefacts that can carry meanings – language (spoken and written), a piece of music, furniture, technology, machine, film, painting, photography. All of these forms, since they carry meanings, can be read (Fairclough, 1995). There is a high degree of symbolism and metaphor in communication and human-made artefacts (texts); the meaning of human communication is rarely literal or straightforward. We actively read each others' signs (language, gestures, movements, actions).

Human-made artefacts are seldom perceived in a narrowly defined way. Moreover, even the objects found in nature may be turned into metaphors by humans. For example, 'rose giving' is most likely to signify 'attraction' or 'passion' from a man's perspective when directed towards a woman (Barthes, 2000, p.113). This act is a pure cultural artefact. In the same manner, speech, written words, photographs or drawings - being cultural artefacts - have signifying properties. Discussing any object, concept, or artefact's signification (meaning) using some structural framework of meaning making can become a possible learning method: one which might uncover unravelling significations in learners' minds.

Although human-made artefacts have the property of making *multiple* meanings, defining the meanings of artefacts is useful and necessary, especially in education. Humans do define the meanings of artefacts (e.g. in dictionaries) in order to avoid chaos and confusion in shared activities. Discursively sharing private perceptions of an artefact and/or a concept may cast light on how humans create meanings of that particular concept or artefact. One of the possibilities for discussing images is achieved through applying the twin lenses of semiotics and social semiotics (also called ‘sociosemiotics’). This general interpretative approach offers versatile tools for ‘reading images’ and investigating meaning making. People can always ignore and challenge the meaning-making potential of communication signs and refuse to make or accept any meaning (Musson, Cohen & Tietze, 2007; Rose, 2007; Jewitt, 2008a, p.4). However, they may not succeed in escaping interpersonal communication. In the case of education, what full-time university students are not supposed to escape (although some may do so) is classroom experience with their peers and teachers. Within this paper, I am advocating an enhancement of classroom experience which might externalize students’ understanding through image-based communication. The following section provides an overview of the importance of image-based communication dealing with the concepts of visual tools’ strength and persuasiveness, meaning making, image interpretation and multimodality. It finishes with a view on the importance of proper instruction for any communicative task as an overture for the following section on image-based communication in HE in particular.

Image-based Communication and Interpretation

Image-based communication has gained special attention in our postmodern society (Jewitt, 2008a, p.1), in spite of the fact that it has existed as long as the early cave paintings (Prosser, 1998). Kress and van Leeuwen (1996) rightly argue that ‘given the importance of visually displayed information, there is an urgent need for developing adequate ways of talking and thinking about the visual’ (ibid, p.33).

Visual inputs inform viewers about many aspects of society. They are influential. The persuasive strength of visual input is exemplified in Michael Apple’s (2004) discussion of the power of *media*-created imagery in audience’s mind. Apple admits that he could not escape the influence of such imagery (Apple, 2004, pp. 159, 160). Seeing the footage of the 9/11 attack, he could not suppress a Hollywood-manufactured idea of how such an attack would look. Apple expected to see more smoke and fire, a Bruce Willis-style magna-destruction like the explosion pandemonium of ‘Die Hard’, and a plethora of similar Hollywood films. In this example, Apple questioned his own foundations of reality when something happened for real, because he compared reality to what that reality was expected to be in his mind. In this way, visual media shape our consciousness and influence our thinking.

Many scholars have investigated visual representations and meaning making, placing their focus on different visual resources such as: advertisements (Barthes, 2000; Amouzedah & Tavangar 2004), health leaflets (Jewitt, 1997), CD ROMs (Jewitt, 2002), monuments (Kruk, 2008), video clips (Martinec, 2000), and so on. What they all have in common is the idea that visual representations convey meanings. This idea offers a possibility for analyzing and discussing those meanings, and thus offers a versatile approach for learning and teaching. If visuals are accompanied by a narrative-based explanation, there is formed a powerful multimodal form of expression. It is this point that Hull and Nelson (2005) make in defining what is so powerful about multimodality: the richness and variations of expression modes.

Making meaning-for-learning of images is one mode of expression. It functions in accordance with certain spatial rules and the orchestration of visual material, as argued by the leading scholars in instructional (multimodal) design and application (Mayer, 2001, Weinstein & Mayer, 1983; Mayer & Moreno, 2002; Carpenter & Shah, 1998). This approach has led to emphasis on the information processing nature of learning from image. Knowing how a visual message is decoded at the cognitive level is important and should be considered when visuals are discussed. However, the focus in this article is not the cognitive debate that surrounds image processing. The article focuses on why and how learners can construct and use images in order to support HE communication and why such communication is important for understanding the taught concepts.

Images and language are different modalities of communication. The same kind of meaning can be conveyed in different modalities (Kress, 1998). It is proposed here that students may create digital artefacts in which both an image and an accompanying narrative convey the same meaning (or a similar one). In that respect, students may be encouraged to create their representations of taught concepts through their own digital multimodal artefact, for example by using the medium of a blog.

Digital and multimedia expression 'privileges personal voice and expression of popular culture and local/private knowledge' (Hull & Nelson, 2005, p. 233) and is in line with the need for personal expression and an acknowledgment of students' socio-cultural backgrounds and prior experience. This supports the communication framework presented here and the educational practices it invites. This procedure may start with a scientific/disciplinary concept chosen by the teacher (from a book, an article, or a lesson). After reading and after attending a lesson, students may be given core concepts (by the teacher) through a type of conceptual grid. This grid may contain the teacher's definition of concepts intended to be learnt as well as important terms and issues that relate to them. Students may then subsequently use images and accompanying narratives to present their understanding of those very concepts. That understanding relates to the image students create in their mind while thinking about the concept. It may happen that students do not form any images of concepts. However, thinking is most likely multimodal, thus not only words are formed in the mind but other accompanying modes that affect understanding: context, shape, sound, smell, emotion, colour. Each mode offers a possibility of transformation into a different mode. For example, emotion 'sad' could be represented through colour 'blue', the smell of something through the image of that something. In each case, students are expected to create accompanying narratives which would act as the main source of expressing their understanding. Once the images are created, communication may be built through discussing and interpreting them, for example following the principles of semiotic meaning making.

Proper instruction prior to interpretation

Interpretation occurs when a percept (what is seen) is assimilated to the memory structure (existing cognitive architecture) (Zoethout & Jager, 2009). In simple terms, this means that prior experience and knowledge structure should be evoked in order for interpretation to occur. Ausubel's (1963) 'advance organizer' reflects the importance of connecting the prior to the ongoing knowledge base: learning is more meaningful if the information presented to the students sets up cognitive scaffolding on which to build understanding of new information. The setting up of cognitive scaffolding is seen to be an 'advance organizer' (ibid.).

An advance organizer makes the assimilation of existing and new structures of information easier. It refers to instruction and task preparation – what is told to the students, how the task is set, what structure is offered for their learning, and why. This is useful for teachers to consider when they use images for the purposes of communication around taught concepts. Explaining concepts with images and setting relevant tasks requires careful and purposeful explanations. For example, teachers can set a task for students to create images and explain to them that the purpose of such a task is revision and consolidation of the taught concepts: their images will thereby serve classroom communication and expose their understanding of the taught concepts. Students can discuss their creations in pairs, with other peers, and with the teacher. Importantly, teachers can preserve the ownership of the lesson as well as knowledge base development and control. Thus, they can move (scaffold) students' interpretation towards the disciplinary concepts taught in their domain in HE practice.

Supporting the framework for an image-based communication in HE

The potential of image-based communication for higher education practice is not a new idea. David Sless (1981) argued in the concluding part of his book 'Learning and Visual Communication' that:

*‘.the overall culture in our societies is increasingly dominated by hybrid forms that use many visual forms of communication which our education system either ignores or simply takes for granted. If our general education does not, in the formative years, develop and enlarge the expectations students have of visual materials, we lose a potential method of understanding which higher education cannot fully take advantage of without engaging in the remedial activity.’
(p.180)*

The questions that can be asked today relate to this 'old' concern: Have students shifted their notions of the visual (e.g. beyond the superficial, decorative and illustrative)? Have academics accepted it, applied it, and embraced it?

An educational concern with the visual started much earlier than the 1980's – in the US, Edgar Dale's 'Audio-visual methods in teaching' was first published in 1945. Still, it seems that despite decades of research acknowledgment and frequent appeals for providing an appropriate space for visual inputs in learning, little has changed in universities today. Visual materials continue to be considered as less academic - reserved for use in school, or simply associated with routine illustrations (Stanzcak, 2004, p.1471) or children's entertainment. Something we depart from when we grow up. It is true that these days' universities are more open to the use of visual materials under the Web 2.0 breakthrough (O'Reilly, 2005; Andersen, 2007) and the new millennium culture of digital media communication. However, the question is whether this use is pedagogically well-defined.

One may also ask whether there has been proper attention to the messages sent through a vast amount of literature on the potential and useful application of visual materials for educational purposes (e.g. Sless, 1981; Barlex & Carre, 1985; Winn, 1993; Marr, 1982; Carney & Levin, 2002; Kress & van Leeuwen, 2006, Jewitt, 2008b). It may be that a certain misuse and misunderstanding of the visual could have contributed to academic scepticism. The point of this paper is to argue that if visual material is treated in a manner that engages students enough and puts them in the position of creators and scrutinizing analysts, rather than idle glancers (Sless, 1981), then the future for pedagogical

use of visuals may be brighter. Seeing is not believing, and nor is it learning. What matters is how this human ability of seeing is articulated within educational practice. It may be a challenging but worthwhile and creative practice for students to tease out ways of linking visual materials to taught disciplinary and curricular concepts. They may thereby be prompted to present their understanding both visually and in words.

Generally speaking, the university is yet to employ an appropriate, learning-oriented use of visuals. Hull and Nelson (2005, p.225) quote Delpit's metaphor of 'logocentric, essay driven universities' (Delpit, 1995). Of course, the primacy of letters is noted. There need be no intention of overthrowing it, just acknowledging other media. This acknowledgment might include the concepts of multiliteracies. The term multiliteracies as meant in this article originated with the New London Group. This group concluded that one side of multiliteracies deals with 'the multiplicity of communication channels and media' (Cope & Kalantzis, 2000, p. 5). Those channels include visual tools. For example, still images are one distinct group of visual tools. In that respect, certain taxonomies of still images and their relation to language that can be used for educational purposes do already exist (e.g. Sless, 1981; Winn, 1993; Carney & Levin, 1985; Martinec & Salway, 2005). An adequate inclusion of still images and other visual materials is sought in order to position them appropriately in teaching and learning practice - not to jeopardize books and articles (Barlex & Carre, 1985, p.21), or establish some new visual educational order. That inclusion again calls upon the previously mentioned notion that visuals are to be seen as a 'potential method of understanding' (Sless, 1981, p.180). The following section deals with the importance of externalizing students' understanding of what they are learning as well as teachers' understanding of their students.

Understanding and learning experience

No one would argue that understanding is not important in real learning. The understanding which is the main concern of this article is students' understanding of taught concepts. Theorising students and the processes of how they make sense of the taught is one thing; another thing is to predict outcomes or to assess them (Sless, 1981). Predicting responses and outcomes (assessment) is necessary and valid, but not the concern of this paper. Rather, its focus is placed on exploring what and how individual students understand within curricular content: this is important to bring to the surface in any teaching and learning practice.

Barlex and Carre (1985) point out the importance of understanding the audience whom the message is directed to which connects to the idea of understanding students as 'target audience of the teacher's message'. The authors invoked the true example of the Pioneer plaque: a pictorial message to other species (see Figure 1). The Pioneer craft was sent to outer space in search of other life forms. It carried a message that was meant to depict humans and their 'position' in the universe. The main point of this example (also presented by Sless, 1981) is that without knowing how alien species make meaning, communicating with them might be problematic and futile. Message designers incorporated their best guess as to what shared frames for message decoding might be and there is little they could have done better. Still, there is a lingering question: Will aliens have the same message decoding structures that enable them to read human message in the same way humans read it? It would also be interesting to see how many humans would interpret the message in the same and similar way in the first place, let alone aliens. This is certainly not to say that teachers are humans and students are aliens. Nor does it call for the overexposure of students' lives and backgrounds. Instead, this metaphor expresses the idea that those two (teacher and student) come to the classroom with different knowledge bases and meaning making approaches.

This article argues that finding channels where students' interpretations of the heard, seen, and taught can be recorded might result in an enhancement of the learning experience and process. That enhancement simply includes an exposure of the prior knowledge base (beliefs and constructs), or cognitive architecture (Zoethout & Jager, 2009) that connects to the ongoing process of learning, so as to open up a different window of understanding.

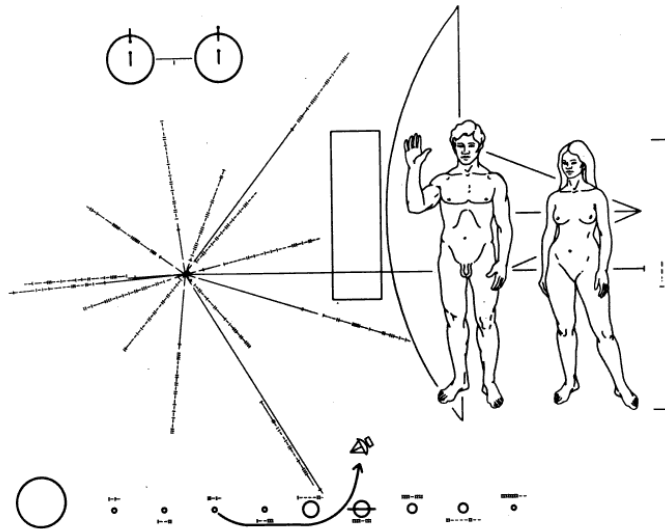


Figure 1: Pioneer space craft plaque (the image taken from Barlex & Carre, 1985)

The framework proposed here may serve as a tool that opens up that window of understanding. In that way, students develop as learners, and hence grow in their respective fields. Furthermore, teachers may provide more adequate feedback, securing an avenue for an effective face to face interaction with the students, showing empathy and concern about the process of learning and difficulties encountered on the way (e.g. related to prior experience or cultural background). Image-based communication may provide an alternative opportunity for HE to foster students' creativity but also humanist values, through being sensitive to students' multi-cultural backgrounds. The following section tackles those issues.

Creative, humanist and multi-cultural communication

Although outcomes and results are important for the university establishment, focusing on the actual process of teaching and learning as well as building humanist values and creativity among students is just as important (Reisz, 2010). It has been concluded that UK universities nowadays (perhaps universities in general) lack the necessary humanist character of education, not securing enough space for imagination and creativity (Molesworth, Nixon & Scullion, 2009). As these authors put it, in referring to Fromm's humanist philosophy: 'the current market discourse promotes a mode of existence where students seek to *'have a degree'* rather than *'be learners'*" (p.278). However, 'an education can not be *had*, but *experienced'* (ibid., p.280). The notion of immersion in subjects in order to develop and change as a person is critical for preserving University's pedagogical worth and valuable teaching and learning experience.

The teaching and learning experience in British higher education is offered to a multi-cultural student population. It is not simply that overseas students increase cultural diversity but home UK students are highly multi-cultural too (Cortazzi & Jin, 1997). Therefore, there is a need to develop inter-cultural competencies and offer learning tools to students which are explicitly

sympathetic to their cultural differences and help them overcome language barriers and inhibitions. It could be that non-native speakers may feel inhibited and overpowered by the language competency and mastery of their colleagues who are native English speakers. Cortazzi and Jin conclude that the learning community needs to develop inter-cultural skills, 'both *learning to communicate across cultures* and *communicating for learning across cultures*'. (Cortazzi & Jin, 1997, original emphasis, p. 79). This is important because through expressing their ideas visually, as argued in the article, all students are equal in that image-based opportunity of expression as opposed to the language one. Their chosen and/or created images may provide fresh opportunities for discussing the role of culture and prior experience for the formation of new knowledge constructs during lessons.

In essence, every lesson aims at presenting some concepts to the students that are intended to be learned. As already mentioned, defining the meaning of concepts and artefacts is central for learners' understanding. That is what builds disciplinary knowledge. Books and articles abound with concept definitions. However, is that what is formed in students' minds while reading a definition or listening to it? Is that how a concept is learnt? Dealing with only a line of words? Concepts are represented through words and definitions in university literature. However, effective concept formation might require concept images. The following subheading deals with the notion of concept definition and concept image in order to point at their relatedness and overlapping existence. Hence, it calls upon image inclusion for the purposes of concept learning and understanding.

Communicating concepts through images

Concept definitions that are created in academic disciplines are a result of our experience with the concept (Vinner, 1983). They are seen as a description of our concept image (ibid.). Therefore, a definition formation originates in human experience and imagining: a concept exists in the world – humans experience the concept – humans create concept images in their minds – humans create concept definitions – humans operate with concepts. Sless (1981) concurs on this point, providing examples of the way some great scientists and inventors produced their theories. They first visualized them. Einstein claimed that the words of language did not seem to play any role in his thinking – in expressing himself yes, but not in his thinking (Sless, 1981, p. 130). Einstein had an image in his mind, a visual representation of the phenomena which then he transformed into words. Nikola Tesla disclosed in his autobiography that he experienced a type of vision or visualization of his inventions before getting down to formulate them on the paper and construct and prove them in experiments (Tesla, 2002). He would also visualize the use of those inventions far in the future in different spaces and places, in a way predicting their future use. Further examples include Watson's discovery of DNA or Kekule's discovery of the benzene ring (Sless, 1981, p. 131) and possibly many others.

In learning, visualization of concept images might cast light on students' concept understanding and push them to employ their imagination and creativity. When learning new concepts, students form concept images related to concept definitions in their minds (Vinner, 1983). After a time, what remains is concept image rather than concept definition (ibid.): although this might evoke concept definition. In spite of the fact that Vinner (1983) refers to the case of definitions and images only in maths, there exists a possibility of transferring this idea to other educational domains. Exploring the images that students create with peers and teachers might uncover the ongoing processes of concept reasoning in almost any domain. Vinner's (1983) approach seems to support the idea proposed here that creating and reflecting on a concept image is beneficial for students' understanding of that concept. Furthermore, attending to prior experience (Dewey, 1938, 1993) by explaining the possible

routes to understanding a new construct may be beneficial for formulating the meaning of that new construct. Beside the mental picture formed in the student's mind, there is a set of properties associated with that picture, namely the properties the student has associated/acquired in connection with the concept. In Zoethout and Jager's (2009) terms, those properties build cognitive architecture and are called socio-cognitive representations (SCRs).

Concept definition is a 'verbal definition that accurately explains the concept' (Vinner, 1983, p. 293). This statement might raise the question of how useful this approach is for social sciences and humanities. Natural sciences, physics or maths might be seen as having many laws and therefore precise definitions, whereas the social sciences and humanities might be defined as having less rigorous, looser concept definitions. Hence, depending on the discipline, the 'rigour' of concepts' definition might vary. Nevertheless, there is a general idea of what taught concepts should be taken to mean, otherwise, anything could be taught. Teachers always introduce certain concepts during their lesson and operate with a more or less defined knowledge base for those concepts.

Barlex and Carre (1985, p.53) quotes Arnheim's (1970) idea that 'if concepts take shape in thinking through the realm of images, many of these must be highly abstract and visual; some may occur subconsciously'. The occurrence of those images in mind during thinking is not transparent. Channeling image externalization might make the process of students' understanding transparent. The images produced will not be the same as the ones occurring during the lesson; nevertheless they might be powerful enough tools for depicting the thought processes. This still doesn't mean that all the students will necessarily form concept images in their minds.

Students may offer their definitions through their short stories around chosen images in order for the teacher to direct/scaffold the development of students' understanding - balancing the concept definition and description he/she knows as a knowledgeable other with the ones presented by the students. Usually, when teachers introduce new concepts to students they expect them to perform further learning to fill in the gap between their own concept image (developed at different levels or not developed at all) and the science-, domain- and curriculum- driven requirements for concept image creation (Vinner, 1983, p.294).The image-based communication framework proposed here encourages students to express how they understand a concept through an image accompanied by a short, personal, explanatory narrative. The following section tackles narrative as a constituent of that communication framework, the framework being the central idea and contribution of this paper - building on and supported by the arguments and literature review throughout the article.

Communicating through narrative

Narrative or story-telling is another form of meaning making seen to benefit cognition. When coupled with an image in the form of a multimodal digital artefact, it offers a powerful richness for cognitive investigations. In his article 'Narratology as a cognitive science' Herman (2000) argues that narrative theory should be viewed as a sub-domain of cognitive science. The main point here for the communication framework is the importance of narrative as a resource for analogical thinking (ibid). A story-like information flow is important – it is a story line that captures the learner's attention and provides a high degree of involvement. Barlex and Carre, (1985, p.4) stresses the importance of 'a high degree of involvement'.

Narrative plays a crucial role in intersubjectivity, which can be defined as the communicative process by which "mental activity - including conscious awareness, motives and intentions, cognitions, and emotions - is transferred

between minds" (Trevarthen (1999) quoted by Herman, 2000, p.415). Narrative in my suggested communication framework functions at two levels. First, it is a short story entry that explains an image – a form of students' concept understanding towards a disciplinary concept definition. For example, a narrative might be written as an event with student-constructed characters and story-line. Second, the same narrative is *discussed* in classroom communication, where a new purpose of narrative is created: the one for consolidation and revision of the concepts monitored by the teacher. That level of narrative builds on the first one which is a reflective and interpretative one. Narrative certainly deserves more space than this short commentary but it has been presented here merely as a part of the communication framework which is explicitly presented at the end of the article; each section so far contributing to its structure. The next section presents blogging as a possible image and narrative repository within the communication framework, adding to the previously argued importance of images, concept definitions (and images), externalizing understanding through communication, creating a narrative and providing feedback. Blogging is seen as a platform for students' image and narrative creation. Blog connects language, image and modern technology. It may offer a viable solution for image-based learning in HE which is supported by ICT.

Going Web 2.0: blogging

A combination of image and text is prominently apparent in the case of designs for blogging. Ferdig and Trammell (2004) argue that blogs are beneficial for education. Their concern is with teachers encouraging students to blog, so the benefits are explored through the benefits for students which are regarded as equally beneficial for teachers.

The pedagogy behind blogs is seen to be constructivist learning in the spirit of Vygotsky, where the main aspect of knowledge construction is 'discursive, relational and conversational' (ibid., p.2). Blogs are meant to be publicly visible and available. In that respect, publication is claimed to be the strong side of blogging since it allows space for reflection, revision, analysis, and feedback (Ferdig & Trammell, 2004). However, if students and teachers wish not to be publicly exposed on the web, there is an option that blogs provide: they can 'hide' their URLs and share them only within their own circle. It is recommended that teachers encourage students to blog securing a clear connection to the studied concepts (ibid.).

The transformational use of blogging is noted by Sime and Priestley (2004) who analysed an on-line forum interaction of a group of student-teachers. This form of communication is defined as a useful medium for validating ideas and sharing the others' personal experiences. 'By doing this, participants transformed these experiences from personal and often ephemeral knowledge into shared and memorable events that came to constitute a body of knowledge, evolved through group reflection and co-construction.' (ibid, p.139).

The following section of this article closes the argument in favour of the image-based communication framework for HE teaching and learning. It suggests the constituents of the mentioned framework which arise from the arguments and literature review in the article so far. It features the actual framework's graph.

Towards the framework for an image-based communication in HE

This article has offered a variety of theoretical underpinnings and perspectives in favour of a framework for of an image-based communication. The

framework should be used for engaging university students to expose and discuss their understanding of the taught concepts. The article provides reasons why the use of visual materials is important for HE learning and teaching practice. Judging from the reviewed literature, there emerges a need for a framework that: connects prior and ongoing knowledge, is sensitive to cultural background and language-related insecurities, uncovers the process of students' understanding of the taught concepts, externalizes students' concept images rather than definitions, provides visual and multimodal means of expression, connects image, text and modern technology (e.g. through blogging).

The following constructs are envisaged to be the constituents of the framework. The framework is seen to be a tool for practitioners, scholars and policy makers for future educational initiatives and engagements:

- a conceptual grid of a lesson's concepts prepared by teachers
- *blogs* as repositories for students' images and narratives
- student (and/or teacher-) -chosen images that represent concepts
- short narratives that explain images
- discussion about images in pairs
- image interpretation based on meaning making theories (e.g. social semiotics)
- peers and teacher's feedback

The following graph illustrates steps in building and performing image-based communication through an ordinal structure emphasizing the framework's constituents (note that some actions can be performed simultaneously (e.g. 5, 6 and 7) and that the graph does not present links among the constituents (e.g. 'feedback' is provided within the 'blog' or during 'discussion')):

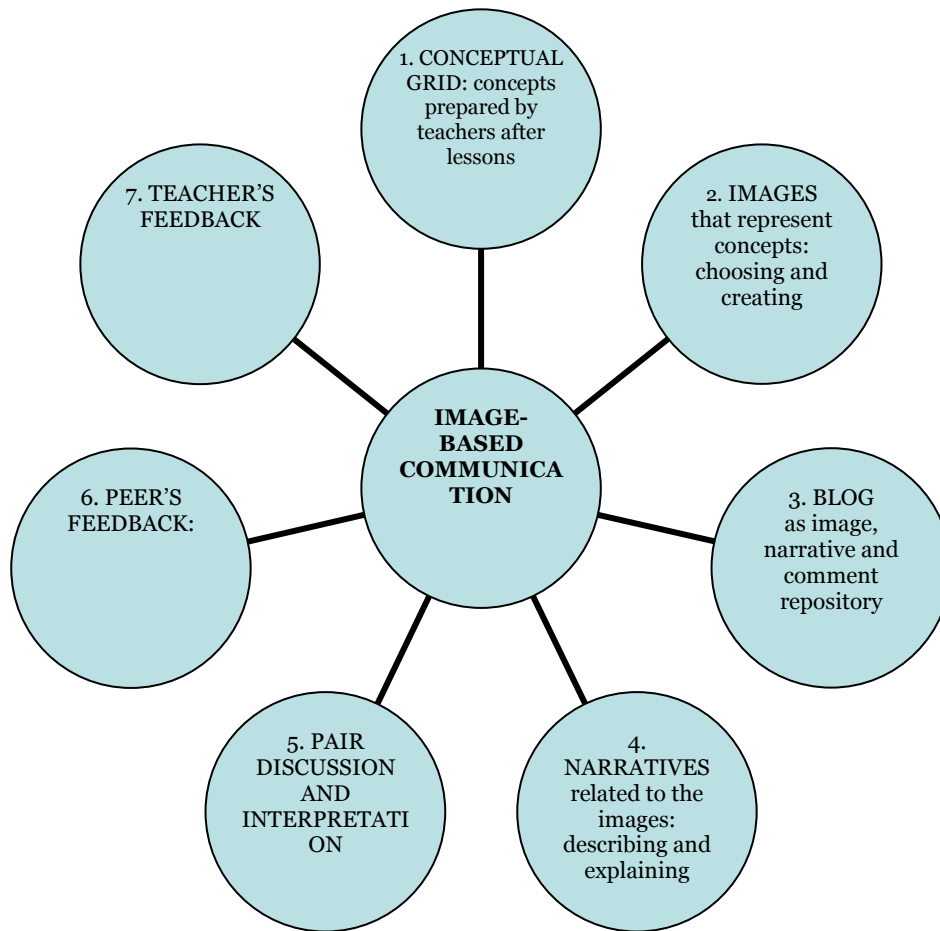


Figure 2: The suggested image-based communication framework

Introducing this framework may face a few constraints. Students are envisaged to be given a choice for their expression through still images: to find them on the web (through any image search engine), or to create them personally using photography, personal albums or drawing. However, it must be noted that there might be difficulties encountered with each option. For example, if images are suggested to be found on the web, there is a time-consuming issue of copyrights. Still, it is expected that the existing free image repositories might be sufficient and that a system of using images for educational purposes will be developed in the future.

Some students may not feel comfortable with drawing and dealing with images. Therefore, it could be a challenge to augment students' trust and confidence in the framework and their own creative and drawing abilities. It is true that not everybody is equally inclined towards and talented for image-based expression. However, certain factors for the success of image-based communication might be predicted: this type of communication - being different from what both teachers and students are used to - would require careful introduction and explanation as to why it helps teaching and learning as well as fitting into assessment and curriculum requirements.

This article has provided theoretical pillars that hold the structure of the suggested image-based communication framework in HE. It has pointed at a possibility for visual tools to act at two levels: as an alternative avenue for externalizing students' understanding and as alternative initiators of classroom communication. It is presumed that the framework might help

towards enhancing students' learning experience and understanding when dealing with new concepts.

Applications of the framework are on their way to being made in practice, subject to one year's field work. The article is an overture to future results and outcomes of the framework's use, and offers an open invitation for commenting and thinking. Thinking indeed, but as Aristotle said: 'Without image, thinking is impossible'.

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