New Media and Mass Communication
ISSN 2224-3267 (Paper) ISSN 2224-3275 (Online)
Vol.26, 2014

An Investigation into Visual language in PowerPoint Presentations in Applied Linguistics

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Abstract

PowerPoint Knowledge presentation as a digital genre has established itself as one of the main software by which the findings of theses are disseminated in the academic settings. Although the importance of PowerPoint presentations is typically realized in academic settings like lectures, conferences, and seminars, studied to probe the role of visual resiurces in presentations have received little attention. The current study aligns its march towards scrutinizing the anatomy of visual interaction in the PowerPoint defense session presentations prepared by Iranian Master of Arts students majoring in Applied Linguistics. The study aims at describing the identity of visual resources in the PowerPoint presentations by categorizing the utilized visuals within the presentations according to their communicative purposes. To this end, the study analyzes 70 PowerPoint defense session presentations given at various universities across Iran in Applied Linguistics. So as to do analysis, the study draws on the typology of visuals introduced by Rowley-Jolivet for classifying the types of visuals. The results of visual analyzing mirrors the fact PowerPoint defense session presentations in Applied Linguistics visualized themselves more by scriptural visuals to their members of discourse community. The findings, moreover, demand a framework of presentations in Applied Linguistics for more norm-compatible presentations.
Keywords: *Visuals, PPs, Visual resoutces, Applied Linguistics.*

1. Introduction

Defense session presentations are among the challenges that Master of Arts (hereinafter MA) students face in their academic career due to the difficult process of writing the thesis as well as the complexity and interrelationships between the speech event and the visual presentation. PowerPoint Knowledge representation is the sine qua non of communication in academic settings. The concept of knowledge implies a thing out in the real world awaiting to be come to light and taken in by the receptive mind (Ramirez & Valdes, 2012). The transmition of knowledge into the mind can be carried out differently depending on its modality whether visual or auditory (Sweller, Kalyuga, & Ayres, 2011); the brain's ability to produce and understand modes (signs) is called semiosis, while this capacity of the brain which permits human beings to be involved in the process of knowledge making is called representation (Danesi, 2004). Visual processing takes place faseter than text in the brain since the brain proceesses picture all at once while it processes text in a linear fashion (Smiciklas, 2012).

Visuals as non-linguistic semiotic resources are the main channel of communicatin in academic settings (Rowley-Jolivet, 2000).Throughout the history of human cultures, visual resources have left traces older then script ones (Kress, 2010). Not surprisingly, nowadays, the world highly represents the domination of visuals as some resources of semiotics. Broadly speaking, the world manifests its existence through visualization (Jamieson, 2007). It goes without saying that in academic PowerPoint presentations, the visual mode plays a significant role in transferring messages to audience.

The various dimensions of textual metadiscourse have been studied by numerous researchers (Gillaerts & Van de Velde, 2010; Hyland, 2004; Ifantidou, 2005; Le, 2004; May, 2005; Thompson, 2003). Hyland (2005) defines metadiscourse as a way to conceptualizing the interactions between the creators of the texts and their texts and between the creators of the texts and their users (p.1). Hyland believes that metadicourse entails the fact that the realm of communication is not limited to the exchange of information, goods or services, rather the realm accommodates the personalities, attitudes and assumptions of those who are communicating. Metadiscourse takes a dynamic view of language since it emphasizes the point that verbal or written

communications create effects on the addressees in which metadiscourse provides options to construct and regulate those effects. Furthermore, metadiscourse puts forward a cognitive framework for understanding communication as social engagement (Hyland, 2005).

Vande Kopple (1988) (cited in Kumpf, 2000) classifies textual metadiscourse into two categories (Figure 1). According to this category, seven kinds of metadiscoure are recognized and put under two main nodes: textual and interpersonal metadiscourse.

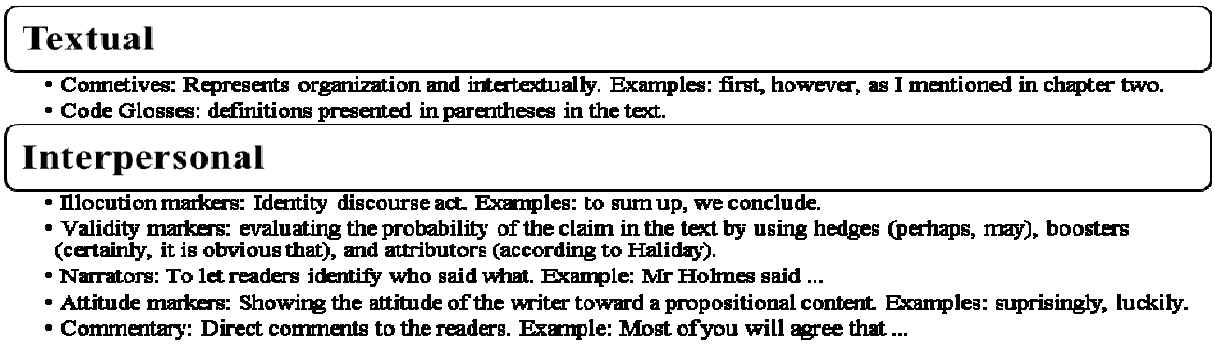

Figure 1. *Vande Kopple's (1988) seven categories of metadiscourse*

The two items in textual class enables the writer to compose a cohesive text which is logically connected and is free from isolated and meaningless words and clauses. A text without such elements is difficult to read and lacks cohesion. The items in interpersonal class try to reflect the fact that human beings are involved in the text and communication is a mutual interaction.

The wide access to PowerPoint software which offers its users the opportunity to import effortlessly visual resources into textual ones, necessitates the move from myopic understanding of visual resources to a more perceptive one. To achieve effective visualization in PowerPoint presentations (PPs) with the presence of various modes with specific tasks and functions, the partnership of modes must follow an adroit plan so that a specific message about a particular issue for a particular audience gains its end (Kress, 2010). The visualization plan includes design, implementation, and evaluation. In the design stage, the appropriate representational technique to achieve the desired illustration of data is set. Implementation defines the procedure to put into service methods and develop algorithms required to make visual representation. Finally, evaluation provides the ground to assess the impact of the utilized visuals as well as set insight for more effective visualizations in upcoming PPs (Interrante, 2005).

The lens of current study is narrowed to investigate the visulity of PowerPoint defense session presentation in Applied Linguistics (AL) from social semiotic viewpoint. One task of any studies in social semiotics is to investigate the fact that in specific culture or institutional context how semiotic resources (the resources in this study are visuals) are used and how the members teach, plan, critique, justify them, etc. (van Leeuwen, 2005). The theoretical foundation of the study is based on the typology of visuals put forward by Rowley-Jolivet (Table 1).

Owing to the software multimodality, flexibility, enhancibility, independence, interactive nature, publishing tool, and multimedia (De Wet, 2006), PowerPoint has proved to be the main medium in academic sphere through which audience receive information (Lynch, 2011); lectures and instructions are given to the students (Parette, Hourcade, Blum, 2011). As a digital tool, PowerPoint has made provision for integration of various signs to create meanings and transfer messages. Thus, it enables presenters to enrich verbal messages with other modes of communication so as to pass the message to its addressee more efficiently (Brumberger, 2005).

In fact, the fertile environment of PowerPoint provides the potential for visual and textual resources to fabricate a multiway product which in essence is multimodal. The master thesis defense session opens aperture for research to investigate its various multimodal genre angles. Unfortunately, the knowledge of properties of visual resource of this genre remained unnoticed and much remains to be done so as to clarify its semiotic characteristics. In this study, the visual structure of master thesis defense presentations composed by Iranian MA students of applied linguistics (AL) is investigated by applying the Rowley-Jolivet's typology of visuals multimodal to elucidate how students in AL respond rhetorically to the academic context.

The advent of PowerPoint has made the integration of various modes of communication into one medium and the creation of a multimodal presentation achievable. Academic presentations and scientific conferences are the main venues for researchers to negotiate and share knowledge. According to Berkenkotter

and Huckin (1995), knowledge production is carried out and codified largely through generic forms of writing. However, the cognitive and rhetorical role that visuals play for meaning-making, necessitate accounting for their generic structure and exploring their effects on oral discourse in general and academic discourse in particular.

In an attempt to solicit the attention to the impotence of visuals in scientific conferences, Rowley-Jolivet (2002) performed a study investigating the role of visuals in the scientific conference paper. In her point of view, visuals play a pivotal role in gaining understanding of cognitive and rhetorical functions in conference presentation genre. In order to explore the visual features of the visuals in conference presentations, she adopted a four-dimension typology of visuals proposed by Bertin (1973). The typology of visuals and their examples are shown in Table 1.

Table 1 *Rowley-Jolivet's typology of visuals*

Type	Example
Scriptural	texts
Graphical	graphs, diagrams
Figurative	photographs
Numerical	mathematical formulas

The study investigated 90 presentations in physics, geology, and medicine. The number of visuals in slides reveals a significant index (a total of 2048 slides projected in the 90 presentations, that is, about 23 visuals in each presentation and about 50 seconds for each slide— regarding the short 15 to 20 minute presentation time). The results of the study highlight the meaningful distribution of different types of visuals in slides: 33.6% Graphical, 25.5% Figurative, 23% Scriptural, and 17.9% Numerical. This superiority of graphical and figurative slides along with the strategic use of Black and White versus colored visuals are among the features accentuated by the researcher as idiosyncrasies of conference presentation genre, at least in the conventions of the disciplines these three fields can be representative of.

2. Methodology

2. 1 Corpus

Seventy PPs prepared and delivered by Iranian MA students of AL to defend their master theses comprised the corpus of the study. Guarantying the generalizability of the findings to the target population and portraying the characteristics of the whole PPs framed the rationale for choosing the sample size. The fundamental parts of a thesis, i.e. introduction, literature review, methodology, results, and discussion and conclusion presented in the PowerPoint format were analyzed visually.

2.2 Instrument

Rowley-Jolivet's (2002) typology of visuals set the framework to analyze the visualities of the presentations.

2.3 Procedure

As PPs rely heavily on visuals for meaning making, anatomizing the characteristics of visual resources of the presentations is crucially important. Accurate analysis of the way viewers process multimodal products contributes to the understanding of interaction between the viewer and the medium (Bateman. 2008). To analyze the visual features of PPs, Rowley-Jolivet's (2002) typology of visuals (see Table 1) adopted. In her point of view, visuals play a pivotal role in gaining understanding of cognitive and rhetorical functions in conference presentation genre. For preliminary analysis of visuals, 20 presentations exposed to a pilot study. The result of pilot study is given in Table 2.

Table 2 *Distribution of visuals in the presentations*

Type of visuals	Frequency	Examples of visuals used in the slides
Scriptural	**20**	**title/student's name/ literature review**
Numerical	**20**	**mathematical formulae/ tables**
Graphical	**8**	**diagrams/pie charts**
Figurative	**4**	**portraits/ photographs**

2.4 Data analysis

The analysis of the visual aids of the presentations was carried out by two mathematical operations, counting the frequency of visual occurrences across different sections of the presentations and calculating the percentage.

3. Results

By probing the collected PPs, a straightforward fact imposes itself into the conclusion that significant majority of presentations belongs to the scriptural category (74.15%) (Table 3). The scriptural visuals serve as boundary devices (Rowley-Jolivet, 2002) to signal the onset of the new section of the theses; meanwhile, the scriptural visuals introduce the title, show the conclusions and recommendations, reveal the questions and hypotheses of the theses, etc. In case where the visual scriptural act as boundary devices, they assume a kind of textual metadiscourse i.e. a set of linguistic devices used to communicate attitudes as well as to indicate the structural properties of the text in which the omission of such elements in a text makes the text a knotty point to read and less cohesive (Kumpf, 2000).

The next most frequent visual type is numerical which accounts for 16.68 percent of the presentations. MA students have used numerical visuals mainly to display mathematical formula and statistical tables. The third and fourth ranks are occupied by graphical and figurative visuals, respectively, which account for 6.9 and 2.16 percent of presentations.

Table 3 *Frequency and percentage of visuals in the PPs*

Type of visuals	Frequency in all slide	Frequency in presentations	Percentage
Scriptural	1578	70	100
Numerical	355	62	87.57
Graphical	147	30	42.85
Figurative	46	22	31.42

3.1 Tables

A table is a flat shape with four straight sides at 90 angles containing cells of different heights or a varying number of columns. Tables are visual aids that are used to illustrate scientific or mathematical data in an organized and uncomplicated way (Swain, 2006).

Results obtained from the current study indicate that 60 presentations (85.7%) used tables to represent mathematical data obtained from analyzing data. Although the software offers MA students to use tables with different format, 52 out of 60 students (86.6%) remained faithful to the APA style and observed its recommendations. Figure 2 illustrates a PP which observed the APA style for drawing tables:

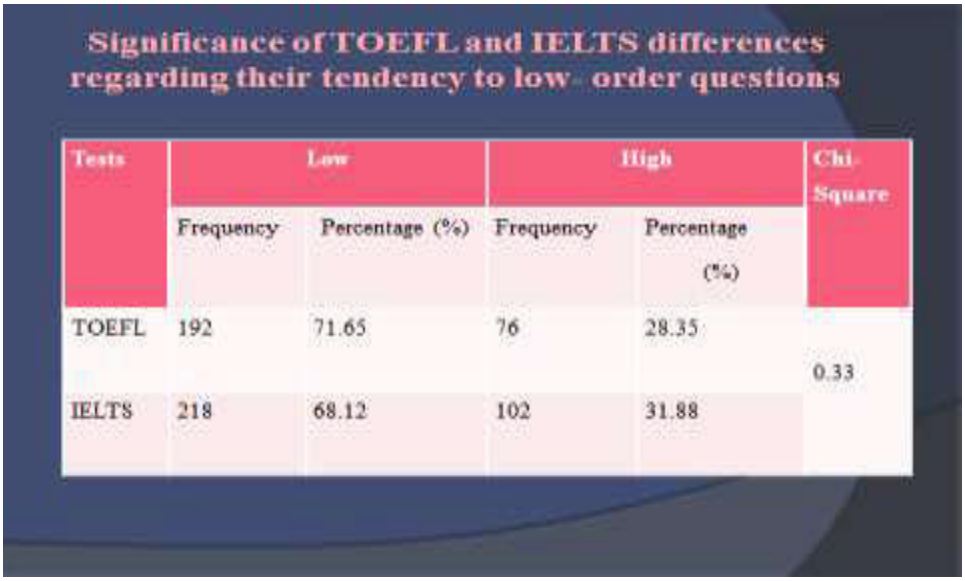

Figure 2 *An example of slides with a table compatible with APA style*

3.2 Fonts

Just as writers pry into every hole and corner to find words and phrases for stylistic effect, MA students have choices to make from the stock of available fonts that PowerPoint software offers concerning font size, font type, and positioning of fonts on individual pages or the slides that affect readability (the ease with which written language is read and understood) and first impression (Kumpf. 2000). The APA standard font for research papers is Times New Roman. However, due to the matter of the readability, research suggests using non-serif fonts for PowerPoint slides (Arditi & Cho, 2005; Pugsley, 2010).

According to Arditi and Cho (2005) serif fonts enhance readability because of their potential in increasing letter discriminability by making the spatial code of letter forms more complex and in increasing the visibility of the ends of strokes which leads to the increase in the salience of the main strokes of the letters. According to typographic practice sans serif fonts for headings and serif fonts for detail text are suitable choices for screen presentations (Daffner, 2002). Moreover, presenters should use no more than three fonts and font sizes per slide (De Wet, 2006). Text is most legible with 1.5 pt. spacing and with a limited amount of information which enables the font size to remain above 26 pt. in the body of the slide (Pugsley, 2010). In order to translate the findings of research in its product, Microsoft has set 32 pt. and 44 pt. Arial as the default font for the body and the heading of PowerPoint, respectively. It should be emphasized that these default settings have the ability to be changed by the users of the software as soon as they want to change the design and the layout of the slides. One more interesting feature of the software with regard to font size is that the increase or decrease in font size is also to some extent automatic; whenever, for example, the textual and visual contents of the slide exceed the capacity of the slide, the font size shrinks automatically to compensate for the space constraint. Yet, this shrinkage in size is done in fixed numbers that vary according to the slide design and layout.

Diametrically opposite with the research suggestions recommending non-serif fonts for PPs (Arditi & Cho, 2005; Pugsley, 2010), the analysis of the PPs reveals that although various font types used by MA students for headings and scriptural visuals, they preferred to use a serif font that is Times New Roman (Table 4). The finding allows for some inferences. First, the MA students' instructors have made the students use this font. Second, APA style had been the criteria for MA students in choosing the font type. Third, the MA students' loyalty to APA conventions seems to be their preference to be judged cognizant of the print conventions of the AL discourse community. Fourth, the students have insufficient knowledge of findings suggesting use of serif fonts in PPs.

Table 4 *The percentage and frequency of fonts in presentations*

Font	Frequency	Percentage
Times New Roman	**34**	**45.57**
Arial	**10**	**14.28**
Constantia	**2**	**2.85**
Garamond	**7**	**10**
Calibri	**3**	**4.28**
Book Antiqua	**2**	**2.85**
Tahoma	**5**	**4.14**
Castellar	**2**	**2.85**
Algerian	**1**	**1.42**
Lucida Sans	**1**	**1.42**
Verdana	**3**	**4.28**

3.3 Transitions

Transitions are integral parts of PowerPoint software that refer to the visual effects that occur while a slide is switched to another one. Transition tab which is one of the tabs located on the PowerPoint ribbon allows users to choose from an array of transitions the one with its particular effect and set different properties or timings for it. They add variety to presentations and when a slide advances to another slide, they add interesting effect on the audience (Wood, 2010). Just as writers use periods or commas in their writing to signal the end of a sentence or change in thought and keep words and clauses separated, users of PowerPoint can benefit from transitions to declare the end of a section or lead the audience from one idea to another.

Despite the importance of transitions in presentations, the results reveal that this visual effect has not been held in high regard by the MA students. Twenty two presentations (31%) utilized transitions and the remaining presentations (69%) blinded themselves as to the merit of them. Eighteen presentations (81.81%) used one type of available transitions and only four presentations (18.19) made uses of different transitions.

3.4 Colors

Within the multimodal PowerPoint presentation sphere, color plays an important role in designing efficient slides. Although the colors chosen for the slides to be projected on the screen in presentations may seem to be a matter of personal preference, there are some theoretically based recommendations that can enhance the

quality of the slides. Daffner (2002) suggests using darker colors rather than light colors for background. He also points out that medium-blue background with yellow or white font lettering makes the texts easy to read. De Wet (2006) recommends using three to six colors per screen, highlighting the important information with bright colors, and using colors to separate concepts. Pugsley (2010) warns the presenters not to use pale colors on the white backgrounds. Galer (1976) states that highly saturated colors are not suitable for backgrounds because these colors when used extensively can tire the eyes. As regards the legibility, Lin (2003) and Shieh and Lin (2000) believe that a blue text on a yellow background is the most legible color combination. Faiola and DeBloois (1988) put forward the suggestion to employ cool, dark, low-saturation colors (e.g., olive green, gray, blue, brown, dark purple, black, etc.) for backgrounds that fade into the slides and do not distract the audience. Foreground colors can be hotter, lighter, and more highly-saturated colors (lemon yellow, pink, orange, red, etc.) that tend to come forward on the screen and attract the audience's eye.

By scanning the colors used in the presentations, these results come to light (Table 5). MA students used blue (33 cases) — not including slides partly tainted blue partly white (five cases) and some others, black (two cases), and orange (one case), for the start-off slide (the slide which begins with the name of God, and names of the university, student, supervisor, reader and date of the defense). The color which took the second rank was grey (14 cases).

Table 5 *The colors, their frequency and percentage in the start-off slide*

Color	Frequency	Percentage
Blue	33	47.14
Grey	14	20
Red	3	4.28
Green	2	2.85
Black	1	1.42
Brown	1	1.42
White	5	7.14
Partly blue partly white	5	7.14
Partly blue partly orange	1	1.42
Partly blue partly black	2	2.85
Partly purple partly white	1	1.42
Partly yellow partly black	2	2.85

For background, the color of choice was grey (28 cases) which equals to 40 percent of the presentations. The runner-up color was blue (19 cases) which equals to 27.14 percent of all presentations. The third rank was occupied by white with 13 cases (18.57%), and red with 3 cases (4.28%), orange with two cases (2.85%), green with two cases (2.85%), black with one case (1.42%), brown with one case (1.42%), and green with one case (1.42%) took the other ranks.

Concerning the font color, MA students employed seven colors for the headings and the body texts. It should be mentioned that in some presentations a combination of three to four and in other cases only one color was used by the students. The most frequent used font color was white (38 cases). Other six colors and their distribution of frequency were as follows:

1. Black: 30
2. Blue: 15
3. Yellow: 11
4. Grey: 8
5. Red: 6
6. Green: 6

Pleasantness probably plays the most important role inspiring MA students to select colors for backgrounds and fonts. In regard to the pleasantness associated with background color combinations, in a study by Valdez and Mehrabian (1995), it was confirmed that blue, green-blue, green, red-purple, purple, and purple-blue were the most favored colors for slides, whereas yellow and yellow-green were the least pleasing ones.

3.5 Animation

The research on the function of animation in presentations has focused mainly on the affordances of this visual application to improve teaching and enhance learning (e.g., Ke, Lin, Ching & Dwyer, 2006; Mayer &

Moreno, 2002; Parette, Hourcade & Blum, 2011). However, since many similarities exist between the functions of animation in education and presentation, the findings can be generalized to the realm of presentation as well. Parette, Hourcade, and Blum (2011) express two main functions of animation in instruction which are (a) the ability of animation to elicit the attention of the learner to important features of the lesson, and (b) to prompt the learner as appropriate to ensure correct responding (p.60).

Knowlton (1964) believes that animation in presentations dresses the ground with a concrete reference and a visual context for ideas (cited in Weissa, Knowlton & Morrisonc, 2002). Because of the link between static and dynamic visuals, animation improves the retention of information among the viewers (Weissa, Knowlton & Morrisonc (2002).

The results of the current study show that 13 out of 70 MA students (18.58%) put to service animation in their PPs. This number indicates that animation which can act as a metadiscourse strategy (Kumpf, 2000) was not favored by the significant majority of students in AL.

4. Discussion and conclusion

PowerPoint has catalyzed the transition of oral speeches to multimodal presentations (Rowley-Jolivet, 2004; Tardy, 2005). The domain of presentations has been given a start to mix itself up with new message carrying modes which have changed this genre to a hybrid one. In fact, professional discourse has witnessed the phenomenon of genre-mixing (Bhatia, 1997) as the result of using digital software like PowerPoint in knowledge sharing presentations. In essence, scientific discourse whether spoken or written is multi-semiotic or multimodal which incorporates both linguistic and non-linguistic signs (Rowley-Jolivet, 2002, p. 22). Functional load in scientific discourse is mainly carried out by visuals, and communication without visual aids such as graphs, tables, and figures is relatively out of question (Tardy, 2005, p.320). Moreover, nonlinguistic elements like pictures enhance texts and speed up grasping meaning; meanwhile they are more factual than words (Myers, 2003).

Visuals effectively assist the presenters to shape and convey message ((Portewig, 2004), and in comparison to their verbal counterpart, they contain more information with no loss in communication (Ochs & Jacoby, 1997). Besides, it is claimed that visuals have the power to persuade, to shape attitudes, and affect actions and beliefs (Blair, 2004). Half of the humans' brain directly or indirectly involves in visual processing, and approximately 30% of its tissue is possessed by neurons that are involved in visual activities (Smiciklas, 2012). Therefore, the visually oriented brain, somehow, necessitates the transfer of information in non-linguistic capsules (Gooding, 2004). Language-as-speech will be the main mode of communication while language-as-written increasingly loses its stand to be replaced by visuals (Kress, 2003). The change from traditional print-based media to new sorts of technologies will change the modes of communication. The ability of new communication technologies to lay the foundations of combining modes will positively affect the interactivity in representational actions (Kress. 2003).

Discourse community delimits the formation of communication between its members. Visuals, like linguistic resources, display regularities which follow the specific community's regulations (Kress & van Leeuwen, 2006). Effective communication means understanding the audience and their needs, the purpose of communication, and the context in which the communication will be received, and then tailoring the message to meet these criteria. The understanding of meaning of visual communication, hence, is bond to its context or its "semiotic landscape" which is the production of its social activity and social history (Kress &van Leeuwen, 2006).

In order to restore equilibrium in PPs, the linguistic part of the presentation should synchronize its visual part. According to Barthes (1986) (cited in Ferceville, 2003) linguistic resources have two functions in their relation to visuals: relaying and anchoring. In their relaying function, linguistic resources carry crucial information that is not present in the pictorial ones. In anchoring function, linguistic resources guide the interpretation and identification of their pictorial components. What will concern the presenter is to create a cohesion in their presentation slides. Meanwhile, distinct logic governs the two modes of linguistics and visuals and they have different affordances. The logic of time and the logic of sequence of the elements in time (to say one thing after another, one sound after another) govern the linguistic resources, while the logic of space and the logic of simultaneity of elements of presentations (placement of visual in center of the screen or above or down) govern the visual resources (Kress, 2003).

The studied PPs in AL defense sessions, shape a semiotic landscape with its particular mannerism. However, communication by PPs makes a requisition for getting acquaintance with the process of design. Design is the most important factor in multimodal communication (Kress, 2003). Considering the visual mode in PowerPoint presentations, attention needs to be paid to the roles of disciplinary genre and individual vision.

Within generic boundaries, greater sensitivity and rapid mastery of discourse conventions enable students to travel faster the distance between the novice station to the full-fledge terminus (Loudermilk, 2007).

Majority of students who populate universities are those who typically use new technologies including the computers, iPods, cell phones, and tablets and are known as digital natives or millennial learners (also known as Net Gen) (Brumberger, 2005). Despite the fact that most of these students are acquainted with the digital technology, however, gleaning knowledge of disciplinary genre is the requirement for membership in a discourse community. Disciplinary genre knowledge prepares the ground for students to proper ways of being and doing as members of specific discourse community. Genre awareness entails both direct teaching and students learning of conventions which are deemed by established members of a specific discourse community to be common exemplars of genres (Johns, 2011). Certainly, for the sake of conformity, a standard toolkit of presentations is required to be prepared in any discourse community. The toolkit will be a base upon which the PPs will be built by the presenters.

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