

## Multimodal Literacy and the Digital Humanities Intersection: A Transformative Approach for Higher Education

Charisa Dada  
Benson Idahosa University,  
University Way,  
Off Upper Adesuwa Road,  
Government Reservation Area (GRA),  
Benin City

### ABSTRACT

*Multimodal literacy—the ability to interpret and engage with multiple forms of communication, including visual, textual, digital, and auditory—has become an essential competency in higher education. This paper explores the role of multimodal literacy in contemporary learning environments, emphasizing its significance in preparing students for the modern workforce. The study applies key theoretical frameworks such as semiotics, transformative learning theory, multiliteracies framework, and multimodality, arguing that multimodal literacy enhances critical thinking, creativity, technological competence, and overall learning outcomes. Using the Digital Humanities (DH) course for Arts disciplines as a case study, this research examines student experiences, instructional challenges, and successes in multimodal learning. Findings reveal that while DH fosters intellectual engagement with digital tools, challenges such as digital literacy gaps, infrastructure limitations, and faculty readiness hinder its full potential. The paper concludes with recommendations for integrating multimodal literacy into the Nigerian higher education system to enhance student engagement and career readiness.*

### ARTICLE INFO

#### Article History

Received: August, 2024

Received in revised form: August, 2024

Accepted: November, 2024

Published online: December, 2024

### KEYWORDS

Multimodal literacy, higher education, digital humanities, transformative learning theory, technological competency.

### INTRODUCTION

The 21st century is associated with remarkable strides in technological innovations and communication. Traditional methods of literacy and communication, which once were primarily print based, are no longer sufficient to equip students with the skills needed to navigate a world brimming with multimedia and interactive content. It is for this reason that this paper advocates for Multimodal literacy which encompasses the ability to interpret, produce, and engage with diverse forms of communication, ranging from visual and textual to digital and auditory modes. It is a critical framework that should be fully embraced in contemporary teaching and learning practices because students need this type of literacy to succeed academically and to function in a tech-driven world. A campaign for multimodal literacy calls for a fundamental rethinking of how knowledge is conveyed and how students engage with content particularly in today's academic and professional environments where

knowledge is increasingly shared through multimedia formats (Jewitt, 2008).

The motivation for this paper stems from the recognition that multimodal literacy equips students with skills to interpret, analyse, and create meaning across a range of multimodal resources (Cope & Kalantzis, 2000). Despite the increasing reliance on digital technologies worldwide, many universities, especially in the Global South, are yet to fully embrace the potentials of multimodal literacy which enable individuals to communicate as well as live in a pluralistic society. Cordes (2009) defines Multimodal Literacy as encompassing "Technology Literacy, Spatial Literacy, Historical Literacy, Political Literacy, Visual Literacy, Media Literacy, Information Literacy, and Multicultural Literacy." This is the kind of literacy required in the higher level of education in contemporary Africa in order to live and compete favourably in today's multidimensional world.

Corresponding author: Charisa Dada

✉ [cdada@biu.edu.ng](mailto:cdada@biu.edu.ng)

Benson Idahosa University, University way, Off Upper Adesuwa Road, GRA, Benin City.

© 2024. Faculty of Technology Education. ATBU Bauchi. All rights reserved

While there is substantial research on digital literacy, multimodal literacy within the higher education context has not been comprehensively explored, particularly in local settings. International studies show that students who are proficient in multimodal literacy are better equipped to engage with and critically evaluate the diverse media they encounter, enhancing their problem-solving and communication skills (Lankshear & Knobel, 2003). Given the increasing importance of multimodal communication in academic and professional contexts, this paper argues that integrating multimodal literacy into the curriculum of higher learning will result in a transformative experience. This approach will not only enhance academic outcomes but also prepare students for the evolving demands of the global workforce, which increasingly values creativity, digital competence, and communication flexibility.

Through an examination of the digital humanities learning outcomes for Arts discipline as case study, as well as interviews, observation and qualitative analysis, the paper explores the need for an intersection between multimodal literacy and DH. The kind of educational materials confronting today's learners range from audio or video slides or clips integrated with sound, music, and other semiotic resources to convey meaning. These diverse modes of communication enrich their educational experiences. Ultimately, this paper advocates for a holistic approach to literacy that empowers learners with skills to navigate an increasingly interconnected media-rich world. The next section discusses the theoretical frameworks and models associated with multimodal literacy and the research methodology for the paper. This is followed by the discussion of recurring themes and patterns from the learning outcomes of the digital humanities course for Arts, the interviews, and classroom observations. This helps to reveal the broader implications of the findings and their relation to existing literature.

## THEORETICAL FOUNDATIONS OF MULTIMODAL LITERACY

At its core, multimodal literacy draws from semiotic theory, whose founding fathers were Ferdinand de Saussure (1857-1913) and Charles Sanders Peirce (1839-1914). The

semiotic framework explores how meaning is created and communicated through signs and symbols, that is, the different ways people represent ideas, objects, and actions using signs and symbols. The meanings generated through signs and symbols are culture specific and beyond language. These signs extend to a range of other modes such as visual, audio, gestural, and spatial. The different modes are broken down as follows:

### 1. Linguistic Mode

The linguistic mode is both written and spoken language with words, phrases, and sentences used to convey meanings and ideas. This used to be the main mode for attaining literacy education but with multimodal communication, the linguistic mode functions alongside other modes, such as the visual or auditory elements, to convey meaning. That is the reason why in a digital presentation, the linguistic mode would often be accompanied with the visual mode such as an image or video, thus, creating a richer message than language alone would convey.

### 2. Visual Mode

The visual mode is associated with visual perception and representation such as images, symbols, diagrams, charts, films and any other visual representation that carries meaning. Kress and vanLeeuwen (1996, 2006) argue that visual semiotics is a key component of meaning-making, as it helps to convey tone, emphasis, and context that may not be fully encapsulated in words alone. The rise of digital platforms in contemporary communication like social media, infographics, and videos has further advanced visual literacy.

### 3. Audio Mode

The audio mode is often a combination of spoken language, music, sounds, and other auditory components that contribute to meaning making. Sound is a crucial semiotic resource in multimodal communication because of the emotional depth, urgency, or clarity it adds to a message. For example, in a podcast, the tone of voice, sound effects, and background music most likely interact with the spoken words to convey meaning in a more nuanced way. O'Toole (2011) emphasises the power of sound in creating meaning, suggesting that audio can

provide emotional cues and a deeper understanding of the speaker's intentions.

#### 4. Gestural Mode

The gestural mode involves the interpretation of movement, such as movements of body parts, facial expressions, and all other forms of non-verbal communication that facilitate meaning. Gestures play a crucial role in face-to-face interactions by reinforcing or altering the meaning of what is linguistically communicated. It can also make meanings without being in combination with other modes, for example, a minister's hand or body gestures while conducting the Holy Mass help interpret the different stages of the mass as he performs oblations before the Blessed Sacrament or image of Jesus. Jewitt (2009) argues that in multimodal communication, gestures are integral parts of influencing how messages are understood and how interaction occurs in both physical and virtual settings.

#### 5. Spatial Mode

The spatial mode involves the arrangement of elements such as objects or people in space in terms of communication, either physical or virtual, including design layouts. Space contributes positively or negatively to people's lives and society at large. For example, the arrangement of a classroom in terms of how the chairs and tables are positioned can contribute to the effectiveness or ineffectiveness of teaching and learning. Spatial layout and information in digital context determine the extent of viewers' participation (Thibault 2000).

#### Interrelation of Modes

In multiliteracy different modes function in combination with one another to construct meaning. Kress (2003) and vanLeeuwen (2001) argue that each mode has its own specific affordances; meaning unique strengths and approach to organising and conveying information, but in combination, they produce dynamic, more effective multiplied forms of communication. In the higher levels of learning, educators and curriculum planners need to do more in the area of course designs so that activities that engage multiple senses can be integrated into every facet of learning. Traditional semiotics eventually evolved into

social semiotics and became a key theoretical approach associated with multimodal literacy. This is discussed in the next section.

#### Social Semiotics

Social semiotics is the belief that meaning is not inherent in signs themselves but emerges through social interaction. It emphasises the social dimensions of meaning-making while traditional or classical semiotics focused on the structural aspects of signs such as their form and function. Social semiotics considers various social factors, such as gender, class, ethnicity, power dynamics, and culture that shape the production and interpretation of signs (Hodge & Kress (1988). The ways in which a particular visual symbol (such as a flag, logo, or emoji) is interpreted can differ relatively depending on the social, political, or cultural context in which it is used. For example, what a flag may represent for one may differ significantly for the other depending on their distinct historical or social experiences with that symbol at specific points in time.

The social semiotic framework is often used to examine how people and communities use various modes of communication (language, visual images, audio, gestures, space) to produce meaning within specific contexts. This involves examining these modes of communication and how they can be combined to create meaning ideologically, within social structures and cultural norms. In this sense, the social aspects of communication, such as, who is communicating, with whom, in what social setting, and with what intentions are crucial in understanding how signs work. The next section discusses multiliteracies and multimodality as forms of additional theoretical pillars of multimodal literacy.

#### Multiliteracies and Multimodality

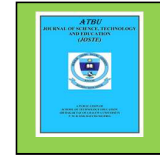
In the tertiary-level context, understanding semiotic resources allows educators to design materials and activities that engage multiple senses such that students' comprehension and retention are enhanced. Multiliteracies Framework developed by the New London Group 1996 focuses on an education that underscores the importance of being literate in multiple modes (e.g., visual,

Corresponding author: Charisa Dada

✉ [cdada@biu.edu.ng](mailto:cdada@biu.edu.ng)

Benson Idahosa University, University way, Off Upper Adesuwa Road, GRA, Benin City.

© 2024. Faculty of Technology Education. ATBU Bauchi. All rights reserved



audio, gestural). This framework supports the integration of diverse media and technologies into the curriculum to prepare students for the demands of the modern workforce. It also requires teachers to understand contemporary technologies such as those prevalent in social media - blogging, vlogging, webinar, podcast, and memes, gaming amongst others, in order to engage with not only colleagues but students as well.

Multimodal Literacy is also strongly linked with multimodality, and just like the aforementioned frameworks and models, it involves the use of multiple modes or channels of communication including different semiotic resources, such as language, image, gesture, sound, spatial arrangements to convey meaning (Kress, (2010). Multimodal communication acknowledges that meaning is made through a combination of different modalities working together to achieve a unified purpose (Jewitt, 2008). These different modes are not simply added together but interact in a way that shapes the overall meaning of the communication thereby resulting in multiplication of meaning (Lemke, 1998).

The intersection of semiotics theories and multimodal theories can be illustrated with the following instance - In a social media post that combines an image, a caption, hashtags, and an emoji, firstly, semiotic theories would be applied to examine how the caption and emoji contribute to meaning within the social context, taking the audience and cultural connotations into consideration. Multimodality, on the other hand, would analyse how the different modes of image, text, and emoji integrate and correlate to create a more nuanced or complex message. The image may evoke emotional responses, the caption might provide information while the emoji could add tone or emphasise to the message. Together, they produce a multifaceted meaning that cannot be fully understood by analysing each mode in isolation. The next section explains the last theory for this paper associated with multimodal literacy (Transformative Learning Theory), the methodology for data collection and analysis, and the practical application of multimodal literacy in higher level of education.

### Transformative Learning Theory

The transformative learning theory by Jack Mezirow (1991) is adopted for this paper because the paper describes multimodal literacy as a transformative experience for higher-level education. This theory highlights critical reflection and engagement as Mechanisms by which individuals change their perspectives or outlook to things. Applying this to multimodal literacy means that students can engage with multiple modes of representations in a critical sense for transformative learning. This challenges their conventional methods of learning, ideas, beliefs and assumptions. Engaging with multimedia and digital platforms in the learning process, for instance, foster not just learner participation and skill acquisition but a new worldview, new mindset and new approaches to decision making. This is the transformative experience every student should acquire every step of their educational development.

### Applications of Multimodal Literacy

The integration of multimodal literacy into higher education has gained significant attention in recent years, reflecting the growing complexity and diversity of communication in contemporary learning environments. In higher education, this augmented view of literacy supports the development of critical thinking, creativity, and effective communication. In this expanded view, students are equipped to engage with complex, multimodal texts that they encounter in academic and professional contexts. This section explores the application of multimodal literacy in higher education through an examination of the course objectives for Digital Humanities (DH) in the new Core Curriculum and Minimum Academic Standards (CCMAS 2022) for Nigerian Universities, newly introduced by the National Universities Commission (NUC) for Arts discipline.

According to Liu (2017), DH courses equip students with the ability to produce projects that consist of the interactions of several modes such as textual, in combination with visual and auditory elements. Content and contextual understanding are achieved as students learn to engage with maps, websites and in the use of digital tools to create visualisations. Although, this course is in its nascent stage, integrating multiliteracies into it

Corresponding author: Charisa Dada

✉ [cdada@biu.edu.ng](mailto:cdada@biu.edu.ng)

Benson Idahosa University, University way, Off Upper Adesuwa Road, GRA, Benin City.

© 2024. Faculty of Technology Education. ATBU Bauchi. All rights reserved

will not only go a long way in transforming the learning experience but will aid in the production of graduates who can fit into any aspect of workforce in this technologically driven world. The methodology is discussed next.

## METHODOLOGY

The data collection method for this paper is document analysis, interview and classroom observations carried out in a private university in South-South where the researcher lectures. The learning outcomes for the newly introduced course for Digital Humanities: Application of Computer to the Arts - was analysed. It is a two-unit course with 30 lecture hours (2 Units C: LH 30). The learning outcomes for the course as spelt out in the CCMAS are that at the end of the course, the students should be able to:

1. Explain what Digital Humanities (DH)s entails;
2. Appraise the DH techniques tools for data analysis;
3. Appreciate the importance of computers in the Humanities;
4. Apply DH to interdisciplinary research;
5. Appreciate the adoption of DH tools for entrepreneurship, and
6. Apply DH to new research, publishing, media, networking.

Interview Questions asked were categorised into themes and patterns

### 1. Demographics

- a) Who are those teaching the course?

Four lecturers spread across the departments in the faculty of Arts and Education. Three lecturers out of the four lecturers handling the course (one each from Education department, International Studies and Diplomacy department and English studies Department) were interviewed. Their names are Dr Chioma Osememam, Mrs Phil Amadi, Mrs Racheal Akamien. (real names withheld). These lecturers had no degree nor certification in digital literacy but being young and dynamic, they self-trained themselves through exposure to materials on the internet. Their teaching experiences range from 10 years, 8 years, and 1 year respectively). The researcher also conducted observational studies to see how the

course is being taught. Notes were made on the following:

- a) The types of DH tools taught and used
- b) How the DH tool enhances multimodal literacy (the integration of text, audio, video, interactive elements)
- c) Learner participation and reactions
- d) Challenges and successes observed during the lesson

The answers provided were summarized based on themes and patterns. The course is new, and their responses though got separately were virtually the same as the course was co-taught by the three instructors.

### 2. Course Content

- b) What are the digital tools or technologies that you most frequently used in the teaching of this course (e.g., data analysis tools, digital publishing software, interactive platforms)?

They have used interactive platforms specifically digital screens (projectors for power point presentation, computers, and televisions)

- a) How did you select the digital tools that were taught to the students?

Firstly, generally, through the course content and specifically, through recommendations from the faculty head who is knowledgeable in the field

- b) Was there any incorporation of multimodal literacy in the teaching practices of the Digital Humanities course?

They did not incorporate multimodal literacy intentionally, but indirectly, as they played a video on what digital humanities entailed and the history of digital humanities. They also used a projector to present the power point slides for text mining which was on WordSmith 9. Part of the course outline for the semester was to introduce the students to digital archiving of materials such as artefacts in pictures and videos. This would have enhanced their cultural knowledge about their heritage and to know how such things are digitally preserved. They would have also visited the National Museum in the city to be exposed to these processes, but they were constrained by time.

### 3. Student engagement

- a) Were the students engaged with multiple modes of communication (e.g., text,

images, audio, video, and interactive media)?

There was no time for such engagements

- b) What assignments and project works were given to the students?

None, due to Time constraints

- c) How did the students respond to the use of digital tools like data analysis software, text mining, or interactive digital media?

Attempts were made to introduce them to text mining but there were time and space constraints. The time was not there for hands-on practicals and the computers were not available in one place to take all the students at once. Besides, since the computers were not exclusively for the course, there were time overlap with other students in other faculties who needed to use the space and the facilities generally. Pre-workshops were organised for the students for these practicals but the time and space constraints hindered the actualisation of the workshop proper.

#### 4. Challenges and Successes

- a) What are the successes and challenges that you encountered in the cause of teaching the course?

Successes include exposure to intellectual knowledge, exposure to the use of software and exposure to computer assisted learning. During the course, students were introduced to WordSmith 9 software with textual database for textual analysis. They were asked to generate a WordList by importing and pasting. Some students were able to do so successfully.

Challenges include lack of qualified teachers for the course, thereby resulting in apathy for the teachers taking the course, time and space constraints, digital divide, interrupted internet access, limited facilities as majority of the students did not have their own laptops thereby resulting in apathy

- b) What were students concerns and enthusiasms

Majority did not have their personal laptops and the students experienced poor access to the internet at some points, but they were excited to learn with interactive media. The majority also expressed concerns as to the authenticity of

information on the internet generally. They also found the text mining class not exciting and had issues with how to apply the knowledge received.

#### 5. Future Impact

- a) Does the course content effectively prepare students for future interdisciplinary work? Why or why not?

Yes. If they are properly and adequately exposed to the digital tools and their use, it will prepare them for future interdisciplinary work.

#### Section B: For students

#### 6. Course Content

- a) Were there instances when you had to use a multimodal tool (e.g., digital archive, interactive map, or video) to communicate your ideas?

No

- b) Do you feel that engaging with multimodal formats (such as videos, digital archives, and interactive tools) will help you better understand and engage with humanities content? Can you explain why?

Yes, because some people learn better through visuals such as videos

#### 7. Challenges

- a) What challenges did you face in the course?

There were time and space challenges, the digital divide, interrupted internet access, limited facilities as majority of the students did not have their own laptops, resulting in apathy. Access to the internet Majority also expressed concerns as to the authenticity of information on the internet generated through digital tools because of their experiences with Chatbots. They did not find the text mining class exciting and had issues with how to apply the knowledge received.

#### 8. Future Benefits

- a) Do you think that the skills you have gained through the Digital Humanities course will help you in your future academic work or career?

Yes. Because we being taught hoe to use technology which is now the order of the day.

- c) Do you think that digital humanities and multimodal literacy will be important in your future career?  
Yes, because we live in a digital world. So, the course will help me in my future career.

### 9. Feedback and Recommendations from Teachers and Students

- a) What suggestions would you give to improve the integration of technology and multimodal literacy in the course?

The course needs trained, experienced hands. It is either the available teachers are trained or qualified ones are employed. Alternatively, the faculty can collaborate with the computer science department of the school or the management of the school to send specialised hands in the field. The school should build a hall with enough computers that can take everyone for the course. There should be uninterrupted power and internet access.

### ANALYSIS AND DISCUSSION

The document analysis for this paper centres on the course content and learning outcomes of the Digital Humanities course. This course was chosen because it has to do with digital tools for research in the humanities. Through an analysis of the first two objectives for the course, this paper argues that the course can be expanded to incorporate Multimodal literacy so that it will sufficiently address the multimodal demands students face in their everyday learning and subsequent professional lives. Multimodal literacy demands interaction and engagement with various forms of media including images, audio, video, and interactive platforms) while DH is a field that combines traditional humanities such as history, arts, literature, philosophy and other forms of cultural studies with digital tools to produce and interpret information in significant ways. Through multiple media, including text, audio, visual, and interactive formats, historical, artistic, philosophical, literary and cultural works are carried out using computational tools for textual analysis. Scholars generally communicate critical ideas into their works using digital tools such as content creation tools, interactive media tools, and digital archiving tools.

The third learning outcome focuses on the application of computers. Computers

enable scholars to integrate various communication modes into their work. This also opens opportunities for collaboration across disciplines, which is the focus of the fourth learning outcome (e.g., computer science and visual arts or language arts). DH projects often combine scholarly texts, maps, visualisations, and digital archives in their analysis, interpretation and creation which requires a multimodal approach. The interdisciplinary nature of Digital Humanities requires the integration of various forms of media, tools, and knowledge domains to convey complex, multifaceted ideas. This aligns with multimodal literacy, which emphasises the ability to synthesise and create knowledge across different formats and academic disciplines.

The fifth and sixth learning outcome place emphasis on entrepreneurial ventures, research, digital publishing, and online networking respectively through the application of various digital tools. Multimodal forms of communication such as text, images, videos, websites, and social media are used in each of these areas to communicate, market, and share knowledge. For instance, digitally mediated publishing uses digital tools in combination with other multiple modes to convey messages online which can lead to a broader audience because everyone shares the digital space. Similarly, digital tools are used to establish online networking. Collaborative and inclusive research can be achieved through social media networking. This brings about proficiency in digital multimodal communication. New media integrate multiple modes of communication such as text, images, audio, video and interactive contents in the production of websites, blogs, digital storytelling and other forms of multimedia presentations. In order to navigate these platforms successfully, proficiency in multimodal literacy is required to interpret, create, and critically assess the different modes of communication embedded within these platforms.

### How the Course Objectives Foster Multimodal Literacy

The course learning outcomes for DH for Arts were reviewed in order to establish its intersection with multimodal literacy. This attempt calls for students to interact with multimodal tools and media through the

Corresponding author: Charisa Dada

✉ [cdada@biu.edu.ng](mailto:cdada@biu.edu.ng)

Benson Idahosa University, University way, Off Upper Adesuwa Road, GRA, Benin City.

© 2024. Faculty of Technology Education. ATBU Bauchi. All rights reserved



integration of diverse tools, technologies, and methods of communication within the Digital Humanities field. In the area of data analysis or in employing DH for interdisciplinary research, students must learn to navigate various modalities of operation from traditional research to contemporary modes. This also applies to DH's adoption for entrepreneurship, new publishing methods, media and networking. In doing so, students not only develop the critical capacity to understand and critique the interaction between modes of representation but also become proficient in using these tools for educational, public, or industrial functions.

In summary, while the learning outcomes for DH provide a broad overview of the field and its practical applications, a more critical, reflective, and interdisciplinary approach will be achieved if course objectives explicitly promote multimodal literacy. Additionally, the need to also give attention to the ethical dimensions and critical thinking around the use of DH tools and technologies in the humanities would further strengthen the connection between the course and multimodal literacy. This involves analysing how multimodal tools shape not only how we communicate but also what we communicate, thus encouraging students' critical reflections on the implications of these evolving forms of digital expression.

#### Enriching the Educational Experience

Multimodal literacy in higher education has the potential to significantly enrich the educational experience, transforming traditional teaching and learning methods into dynamic, interactive processes. Educators would be able to engage and motivate students in more dynamic, comprehensive and immersive ways leading to better comprehension and longer retention of material. Through this approach, different learning styles are catered for while critical thinking, creativity, and deeper engagement with course content are encouraged. As students encounter and navigate multimodal texts, they develop the skills necessary to analyse and synthesise information across multiple platforms, preparing them for real-world challenges. Multimodal projects and activities often require teamwork and effective communication. This enables students to develop interpersonal skills and learn to collaborate effectively, preparing them

for the collaborative nature of the modern workplace.

Additionally, engaging with digital and multimedia tools enhances students' technological literacy, an essential skill in today's digital world. They become proficient in using various technologies for communication, research, and problem-solving. Multimodal approaches can accommodate diverse learners, including those with disabilities. Providing content in various formats ensures that all students have equal access to information and learning opportunities. Multimodal literacy fosters a culture of continuous learning and adaptation. Students become more comfortable with evolving technologies and learning methods, preparing them for lifelong personal and professional growth.

#### CONCLUSION

Implementing multimodal literacy in university curricula presents both challenges and opportunities. While technological limitations, faculty training needs, curriculum redesign, and student adaptability pose significant hurdles, the potential benefits are substantial. By addressing these challenges through strategic planning, resource allocation, and continuous support, universities can harness the transformative power of multimodal literacy to enhance the learning outcomes for the Digital Humanities programme. The combination of text, images, data, and interactive elements in the DH course encourages engagement with various forms of communication in teaching, learning and public settings. This approach not only improves student engagement and outcomes but also prepares graduates for the complexities of the modern world.

#### REFERENCES

- Cordes, S (2009). Broad Horizons: The Role of Multimodal Literacy in 21<sup>st</sup> Century Library Instruction. IFLA
- Core Curriculum and Minimum Academic Standards (CCMAS: 2022). Arts CCMAS final, Abuja.
- Cope, B., & Kalantzis, M. (2000). *Multiliteracies: Literacy learning and the design of social futures*. Routledge.

Corresponding author: Charisa Dada

✉ [cdada@biu.edu.ng](mailto:cdada@biu.edu.ng)

Benson Idahosa University, University way, Off Upper Adesuwa Road, GRA, Benin City.

© 2024. Faculty of Technology Education. ATBU Bauchi. All rights reserved



- Hodge, R., & Kress, G. (1988). *Social Semiotics*. Polity Press.
- Jewitt, C. (Ed.). (2009). The Routledge handbook of multimodal analysis (pp. 98-113). Routledge.
- Jewitt, C. (2008). Multimodality and literacy in school classrooms. *Review of Research in Education*, 32, 241-267.
- Kress, G. (2010). *Multimodality: A social semiotic approach to contemporary communication*. Routledge.
- Kress, G. (2003). *Multimodal discourse: The modes and media of contemporary communication*. Edward Arnold.
- Kress, G., & van Leeuwen, T. (2006). *Reading images: The grammar of visual design*. Routledge.
- Kress, G., & van Leeuwen, T. (1996). *Reading images: The grammar of visual design*. Routledge.
- Lankshear, C., & Knobel, M. (2003). *New literacies: Changing knowledge and classroom learning*. Open University Press.
- Lemke, J. L. (1998). Multiplying meaning: Visual and verbal semiotics in scientific text. In J.R. *Pedagogical Inquiry*. 18.
- Liu, A. (2017). *The Future of the Digital Humanities: A Roadmap for the 21st Century*. University of Michigan Press.
- Mezirow, J. (1991b). Transformation Theory and Cultural Context: A reply to Clark and Wilson. *Adult Education Quarterly*, 38(3), 188-192. Doi: 10.1177/0001848191041003004
- New London Group. (1996). A pedagogy of multiliteracies: Designing social futures. *Harvard Educational Review*, 66(1), 60-92.
- O'Toole, M. (2011). *The language of display design*. Routledge.
- Peirce, C. S. (1931-1958). *Collected Papers of Charles Sanders Peirce* (C. Hartshorne, P. Weiss, & A. W. Burks, Eds.). Harvard University Press.
- Saussure, F. de. (1916). *Course in General Linguistics* (C. Bally, A. Sechehaye, & A. Riedlinger, Eds.; W. Baskin, Trans.). Philosophical Library.
- Thibault, P. J. (2000). *Multimodal discourse: Towards a theory of text and image* (Vol. 2). Continuum.
- Van Leeuwen, T. (2001). *The handbook of visual analysis*. Sage.