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An Analysis of the Search Skills of Online Graduate Students as the Basis for the Development of Appropriate Instructional Strategies

Olabisi Kuboni

*UWI Open Campus, The University of the West Indies
Trinidad and Tobago*

1. Introduction

Many advocates of online teaching and learning contend that one of the major benefits of studying in an online environment is the access it provides to a vast amount of resource material. No longer are students limited to what is available in their own institutions; rather, given the constantly expanding capacity of the world wide web (WWW), there is virtually no limit to the resources that students can draw on to support their learning. While this is certainly a major advantage, many practitioners concur that it also presents significant challenges for the graduate student, given a situation where, as online learners, they are assuming almost complete responsibility for all aspects of the multi-faceted task of locating, selecting, evaluating and using information as required in the various areas of their study.

In recognition of the possible difficulties that students could encounter in carrying out this task, there have been several generic guidelines developed. Students are expected to follow these guidelines and apply them to the specific discipline-related task that they are required to complete. Thus, they would conduct the search to identify appropriate resources, evaluate these resources and make notes in relation to the topic or area of study for which the search is being conducted. While acknowledging the value of such guidelines, it is being argued that this prescriptive approach is not always appropriate for all students, and that a more bottom-up approach should be considered.

This study is therefore intended to analyze students' efforts at sourcing, selecting and extracting information relative to an essay topic. The overall purpose is to assess these efforts against a defined standard as a preliminary step towards the generation of instructional strategies that may be more effective in assisting students in developing more effective skills for identifying, gathering and using information from online sources.

2. Context of the study

The Graduate Programmes Department (GPD) of the Open Campus of the University of the West Indies (UWI OC) has recently begun offering fully online programmes at the post-graduate diploma and Masters' levels. The main body of its student population is located in

the fifteen Caribbean countries that support the parent institution, the University of the West Indies. The GPD is therefore aware of the need to provide optimum support for this distributed body of students who, though having the opportunity for interpersonal interaction through the web-based learning management system, must assume a high level of responsibility for their learning.

The main qualification for entry into either type of programme is an undergraduate degree. Many of those admitted would have also obtained this qualification through the online delivery facility of the Open Campus. Nonetheless, given the increased demands of study at the graduate level, and the fact that these mature students may not have a sustained post-secondary formal education experience, the GPD considered it important to include a compulsory three-week orientation programme to assist students in strengthening their capability to undertake graduate study in an online environment.

2.1 The annotated bibliography

One segment of the orientation course was the preparation of an annotated bibliography. The following overview provided the rationale and overall purpose of the activity:

For most of your essay writing, you will need to identify and select information based on the topic you are required to write about. You will draw that information from various sources. As an online student, you will find that most of your searches will take place online. For this activity, you will source material based on an essay topic and you will prepare an annotated bibliography based on the material sourced. You will also review and apply guidelines for referencing the materials sourced.

Four essay topics were provided and students were required to select one for the purposes of undertaking this activity. Specifically, they would write an annotation for each of four (4) sources selected to address the selected essay topic. This activity was to be carried out in teams of two.

The following guidelines were provided to support the task:

Even before you begin the search for resources, you need to get a clear understanding of the topic for which you will be conducting the search. Here are some questions you may ask yourself as you undertake this task:

- Do I understand the topic taken as a whole?
- Do I have any prior knowledge and/or experience that I can draw on to write about this topic?
- What exactly am I expected to do with this topic? What task am I expected to carry out as I write about this topic?
- What are the key words that I should pay special attention to?
- Are there any related terms and/or synonyms that I should also consider?
- What type of resources should I use to carry out the search for information on this topic?

Each annotation was expected to be between 100 – 150 words long.

Additional resource material to support the activity was drawn from two online websites.

One was the Online Information Literacy (OIL) programme and specifically Module 2 – the Annotated Bibliography. The OIL module was divided into three segments namely search for resources, cite information, write and present. One subsection under the heading ‘Search for Resources’ was ‘Searching the WWW’, with information provided on the following areas:

- Search Engines
- Choice and Use of Keywords
- What’s a directory
- Evaluating websites
- Invisible Web

<http://oil.otago.ac.nz/oil/module2.html>

The second was the Purdue Online Writing Lab and its section on Annotated Bibliographies. This resource identified the three main tasks to be undertaken when doing an annotation as summarize, assess, reflect. It also outlined the format to be used when writing the annotation, including the following:

The annotations: The annotations for each source are written in paragraph form. The lengths of the annotations can vary significantly from a couple of sentences to a couple of pages. The length will depend on the purpose. If you're just writing summaries of your sources, the annotations may not be very long. However, if you are writing an extensive analysis of each source, you'll need more space.

You can focus your annotations for your own needs. A few sentences of general summary followed by several sentences of how you can fit the work into your larger paper or project can serve you well when you go to draft.

<http://owl.english.purdue.edu/owl/resources/614/01>

To complement the primary resource materials drawn from the websites, students were advised to review Chapter 5 of Crème and Lea’s 2003 e-publication, *Writing at University*. In particular, they were advised to pay close attention to two sections of that chapter, namely ‘Choosing reading for an assignment’ and ‘referencing and plagiarism’.

It should be noted that while the materials provided were organized relative to the objectives to be attained, much of it was in the form of resources from the two websites identified earlier and these were not necessarily specifically tailored to meet the requirements of the learning activity of the orientation course. While some attempt was made to provide guidance on how to use these resources, students were still required to do their own selection based on their understanding of the overall task.

2.1.1 The annotated bibliography and information literacy

The writing of an annotated bibliography falls within the broad range of information literacy tasks. The Chartered Institute of Library and Information Professionals (CILIP) of the United Kingdom defines the broader set of skills as follows:

Information literacy is knowing when and why you need information, where to find it, and how to evaluate, use and communicate it in an ethical manner.
<http://www.cilip.org.uk/get-involved/advocacy/information-literacy/Pages/definition.aspx>

The definition that is most commonly referred to is that developed by the American Library Association (ALA). One point to be noted is the way the ALA frames its definition as an attribute of the information literate person. Thus, it states,

To be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate and use effectively the needed information. (1989) <http://archive.ifla.org/IV/ifla70/papers/059e-Campbell.pdf>

While this area of skill-building has always been considered key in formal education, it has assumed special significance for online learners given the fact that for most of these learners, the physical library, with all the human resources that are an integral part of that facility, is no longer available. The one-on-one support of the human library information specialist is no longer a feature of education in the web-based environment. Further the vast increase in the quantity of accessible information on the Internet, means that an even higher level of information literacy capability is required of students if they are to be successful in their information-searching, evaluating and using tasks.

The writing of annotated bibliographies was included in the orientation course for graduate students preparing to begin a fully online programme of study, since it embodies all the key information literacy skills and serves as an effective vehicle to allow students the opportunity to develop those skills.

This study is based on an analysis of the annotations prepared by the students who participated in the course conducted in January 2011. The course was itself a fully online course.

3. Literature review

Whatever their differences in orientation about teaching and learning in the online environment, one position on which practitioners and theorists find common ground, is that learning is the primary activity taking place in the environment and should be the focus of study and practice aimed at improving the online student experience.

Ally (2004) is very clear about this. He asserts,

The goal of any instructional system is to promote learning. Therefore, before any learning materials are developed, educators must, tacitly or explicitly, know the principles of learning and how students learn. This is especially true for online learning, where the instructor and the learner are separated. The development of effective online learning materials should be based on proven and sound learning theories....

Learning strategies should be selected to motivate learners, facilitate deep processing, build the whole person, cater for individual differences, promote meaningful learning, encourage interaction, provide feedback, facilitate contextual learning, and provide support during the learning process. (p.6)

It can be argued that the definitions of information literacy outlined above, as well as the guidelines provided for doing the annotated bibliography are more biased towards articulating the tasks that should be undertaken to develop competency than to providing strategies to support learners as they set about to build knowledge and skills. Some may argue that the task-identification approach used in formulating definitions and providing

instruction does not go far enough to address the core learning capabilities that are required if students are to function to their fullest potential as information literate persons. This issue of the need to focus on learner needs is also a concern of practitioners and analysts in the field of information literacy. The work of two analysts will be examined in this regard. Even though the context of their concern is not the online environment, their fundamental perspectives are very relevant.

Shelley (2009), even though writing about skills development in the face-to-face context, offers some thoughts that are equally applicable to the online. Making the case that “critical thinking or higher-order thinking is a crucial component of achieving information literacy”, she asserts,

The concept of information literacy should go far beyond users’ acquisition of banked skills. The competence to execute a keyword search in a specific database, navigate a library catalog, or memorize a certain call number does not indicate users are able to think on their feet. Users who are truly information literate have the capacities to solve problems, think independently, and they are able to structure their own research processes once they leave the classroom.

In light of the above, she recommends, *inter alia*, the use of strategies to stimulate students’ intellectual curiosity in seeking information, motivate students to exercise systemic thinking, apply exploratory questions toward an area of interest. Shelley’s work is somewhat superficial and largely prescriptive rather than analytical and evaluative. Nonetheless, it represents an important departure from the conventional task-focused approach to articulating the competencies required for developing information literacy.

Kavanagh (2011) reports on a study conducted over a three-year period aimed at evaluating the effectiveness of an information literacy module integrated into subject-specific academic programmes. This approach of integrating or embedding instruction about information literacy into a course being studied is, according to Kavanagh, regarded by library information specialists as being more effective than the generic approach. The development of a marketing plan, done as a group project, was the area of study selected. The main assessment was the development of a plan to introduce a new product to the Irish market. Each group was also required to keep a research strategy log to document the library resources used to conduct secondary market research and to find academic articles for their marketing plan. The author justifies the inclusion of the log this way:

This allowed the library team to assess each group’s research process rather than its results, thereby ensuring that those groups who chose a product for which market research information was not readily available were not penalized for the unavoidable absence of market research reports from their reference list. (p.8)

A handout was prepared to assist groups in undertaking the research strategy activity. The author acknowledges that it did not have the desired effect in the first year of the project since most groups did not submit a log. Improvements were made to the tool in the second year and the submission rate in both the second and third years increased. However, in her conclusion, the author seems to suggest that the log strategy was not as successful as initially hoped for, since students continued to find the exercise difficult. It is not the purpose of this paper to assess the strengths and/or weaknesses of the strategy employed to ensure that students prepared the log. What is important here is that learners were provided

with the opportunity to articulate and engage in acts deemed appropriate when the focus is on the process of the learning activity, rather than exclusively on its task-specific outcome.

This study was developed to assess the extent to which prospective students of the UWI Open Campus' online graduate programmes were engaging in the learning process in a manner that would facilitate their attainment of the stated outcome of producing annotated bibliographies. To this end, content analysis methods were used to analyze the annotations produced by teams of students as part of their participation in the orientation course that was developed to assist them in strengthening their competency to engage in online learning at the graduate level.

4. Research questions

In light of the foregoing, a research study was conducted, based on the following research questions:

1. How competent are incoming online graduate students of the UWI Open Campus in sourcing material related to an essay topic and developing annotated bibliographies on the materials sourced?
2. What preliminary instructional strategies can be gleaned from the analysis of these annotations?

Based on these questions, the following sub-questions were generated:

1. How capable are these prospective graduate students at identifying and interpreting key terms?
2. How capable are the students at analyzing a complex essay topic?
3. How capable are the students at selecting appropriate segments of material sourced relative to the requirements of an essay topic?
4. What summary-writing skills do these students display?
5. What are the areas of weaknesses that need to be addressed through instruction?

5. Limitations of the study

There are two limitations that should be noted about this study. The researcher did not read any of the source materials. Thus the annotations were examined without direct reference to the documents on which they were based. While this may be regarded as a disadvantage in one sense, it was felt that annotations can stand on their own, capable of communicating the information required by those accessing them. This researcher did not consider it necessary to refer to the sources in order to assess the annotations themselves.

In the instructions provided in the study guide, students' attention was drawn to the three broad tasks that the Purdue OWL website highlighted for developing the annotation, namely summarize, evaluate and reflect. The analysis done for this study focused on the summarizing aspect only for two reasons. First, in most annotations, there was no evidence of the other two dimensions. In the few instances where there was an attempt at the evaluative, these were largely not in keeping with the core requirements of such a task. This will be explored in more detail later. Given this situation, the researcher decided to concentrate on the summarizing aspect of the annotation. While this may be regarded as a

limitation, it was also felt that doing the summary was a substantial multifaceted undertaking and that much can be gained by examining it in its own right.

6. Methodology

Content analysis methods were employed for both data collection and data analysis. In describing the research method of the study therefore, no distinction is made between procedures used for data collection and those used for data analysis since one set flowed seamlessly into the other.

6.1 Overview of research method

A mixed-methods approach was employed in the design of this study; thus methodology combined quantitative and qualitative as well as inductive and deductive approaches.

6.1.1 The quantitative and qualitative in content analysis

In some circles, the issue of whether content analysis should be viewed as a quantitative or qualitative method for the analysis of text data is still an area of debate. Wesley (2011) considers it important to bring the debate to the fore and makes the following assertions:

First ... no research topic is inherently qualitative or quantitative ... the subject matter itself does not determine which tradition should be employed. Second, specific methodologies do not belong solely to one tradition or the other. Surveys can be quantitative or qualitative, as can ... content analysis ... (p.126)

He then proceeds to explain the conditions in which each applies. He states,

Because quantitative research involves numbers, frequencies, intensities, and other measurements of degree, it is particularly well suited to questions of How much?, How often?', and How many? By contrast, qualitative research deals best with questions involving conditions, norms, and values. (p.126)

This researcher holds the view that there is value in adopting Wesley's perspective. To this end, Hosti's (1969) broad definition, as cited in Stemler (2001), was considered appropriate for this study. Specifically, Hosti viewed content analysis as "any technique for making inferences by objectively and systematically identifying specified characteristics of messages". <http://pareonline.net/getvn.asp?v=7&n=17> . Reference to 'any technique' suggests that both qualitative and quantitative techniques qualify.

6.1.2 The inductive and the deductive

Hsieh and Shannon (2005) use their interpretation of qualitative analysis as the backdrop for their comprehensive discussion of the approaches to conducting this form of content analysis, describing three approaches namely the conventional, the directed and the summative. It is beyond the scope of this chapter to explore this aspect of their work in any detail. What should be noted though is that these approaches are essentially enhancements of the inductive and deductive approaches that entail emergent coding techniques, with categories being identified from themes and patterns emerging from the data, and a priori

techniques, where categories are established prior to the analysis based on some theory or previously determined themes. (Stemler, 2001).

6.1.3 Broad analysis considerations

Finally, the study took into account the six questions proposed by Krippendorff (1980) and cited by Stemler (2001), which according to the original author, every content analysis must address. The six are,

1. Which data are analyzed?
2. How are they defined?
3. What is the population from which they are drawn?
4. What is the context relative to which the data are analyzed?
5. What are the boundaries of the analysis?
6. What is the target of the inferences?

All of these questions are addressed, whether explicitly or implicitly, in various aspects of the study.

6.2 Sampling procedures

As indicated earlier, the study was undertaken to examine the annotated bibliographies produced by prospective students of the Open Campus' online graduate programmes. Students, working in groups of two, were required to select one of three essay topics and produce an annotated bibliography comprising four annotations to inform the writing of the essay on the selected topic.

For the purposes of this study, the researcher selected work submitted in relation to one essay topic only. The selected essay topic was as follows:

The mobile phone is making more significant changes to people's lifestyles in contemporary times than the landline equivalent did in an earlier era. Do you agree with this assertion?

Of the teams that selected this topic, a random selection was done to identify the assignments of ten of them. Some of the selected teams did not complete the required quota of four annotations, thus the number of annotations available for analysis was thirty-six.

6.3 Defining the unit of analysis

In each annotation, the sentence was identified as the unit of analysis. This element was selected to make available the smallest possible unit that could be viewed as a meaningful whole in its own right. While smaller and more limited elements, such as words and phrases, were also identified for analysis, it was their role and function in the context of the sentence that made the analysis possible.

For the purpose of the study, the sentence was deemed to be a single unit of meaning comprising three sub-elements namely the verb, the agent of the verb and the extension of the verb. While some of the sentences in the annotations met these criteria, others did not. Many of the sentences in the annotations produced by the student-teams were more complex, combining more than one unit of meaning as defined above. In such cases, the existing sentence was subdivided to yield units that met the requirement as outlined above.

For example, the last two examples of Exhibit 1 below were both combined into a complex sentence in the annotation but for the purpose of this study are deemed to be separate units of meaning. In addition, where a pronoun is used in a follow-up sentence in the original, the noun to which it refers is inserted to ensure that the meaning is clearly conveyed.

Exhibit 1: Examples of units of meaning

- MP5: The article compares landline and mobile phones.
- MP20: Mobile phones have provided lots of fun and convenience to people’s lives.
- MP115: This article outlines succinctly the anachronistic nature of the landline phone.
- MP116: It [the article] delves into experiments conducted.
- MP117: [It] cites pertinent statistics based on research conducted by the European Commission.

The verb was viewed as the sub-element that served as a bridge between the other two sub-elements and in the process holding the sentence together as a meaningful whole. The agent only comes to light through its association with the verb. Additionally, it is the verb that gives coherence and structure to the additional information contained in the extension.

To prepare the units of meaning for subsequent analysis, each was organized according to the three sub-elements described above and as shown in Table 1.

Data ID	Agent of verb	Verb	Verb Extension
MP5	The article	Compares	Landline and mobile phones
MP20	Mobile phones	Have provided	Lots of fun and convenience to people’s lives
MP115	This article	Outlines succinctly	The anachronistic nature of the landline phone.
MP116	It [the article]	Delves	Into experiments conducted.
MP117	And [It]	Cites	Pertinent statistics based on research conducted by the European Commission

Table 1. Division of unit analysis into three sub-elements.

Based on this method, 164 units of meaning were identified in the thirty-six (36) annotations selected for analysis.

6.4 Data analysis procedures

As indicated earlier, quantitative and qualitative, as well as inductive and deductive strategies were employed in data analysis. Data analysis was also conducted at a primary and secondary level.

6.4.1 Primary level analysis

The deductive approach was taken to analyse the data at this level, driven by features inherent in the essay topic as well as approaches related to the writing of an annotation. Thus, an a priori approach was taken to generating codes that would form the basis for further analysis. The following were the areas of analysis undertaken at the primary level:

- Frequency count of key terms of essay topic as observed in the units of meaning.
- Frequency count of key terms used in relation to one another in the same unit of meaning.
- Classification and coding of the main verb relative to its use in the annotation.
- Classification and coding of the units of meaning relative to their function in the annotation.

6.4.2 Secondary level of analysis

At the secondary level, the analysis shifted to the inductive and was purely qualitative. The codes generated at the primary level, in association with the key terms identified, formed the basis for making observations about likely strategies that students were employing to produce the annotations.

The above provided the framework within which the actual data analysis was undertaken.

7. Data analysis, findings and discussions: Primary level analysis

This section focuses on the analysis undertaken at the primary level only. It reports on the analyses conducted, the findings generated from those analyses and seeks to provide some tentative interpretation of those findings.

7.1 Frequency count of key terms

A word or short phrase, appearing in the annotations, was considered a key term, depending on its function in the essay topic. Specifically words that served as indicators of the areas for which the search was to be conducted, were considered key terms. Main verbs, that is those verbs that served as anchor for the whole unit of meaning were not included as a key term and were accounted for separately. The key terms identified were 'mobile phone', 'people's lifestyles', 'significant changes' and 'landline'.

Where only part of the term was used, for example 'mobile' or 'lifestyle' or where the expression was completed, as in 'landline phone', these were also accepted as meeting the criteria of a key term. Also accepted were pronouns referring to any of these nouns or noun phrases. Additionally, synonyms of these expressions, for example 'cell phone', 'fixed lines', 'people's daily life', 'the lives of citizens', 'changing effects' were accepted.

While principal verbs did not qualify for inclusion as key terms, there was one situation where a verb and its synonyms in the verb extension were seen as warranting inclusion as key terms. In these limited cases, the idea of 'change' expressed as a verb in the verb extension, was counted as a key term (See Exhibit 2).

Exhibit 2: Examples of 'change' as a verb included as a key term

MP 51: How the cell phone's ever changing capabilities ... **have changed** the way people conduct business.

MP 58: ... how the use of mobile phones **affect** the lives of citizens.

Table 2 provides a frequency count of the appearance of each of the terms, inclusive of their synonyms, in the annotations selected for analysis. It should be noted that these appeared primarily in the verb extension.

Key terms (incl. synonyms)	Count
Mobile phone	118
Landline phone	31
People's lifestyle	32
Change	19

Table 2. Frequency count of key terms in annotations.

In terms of direct referencing therefore, one cannot ignore the stark difference between the number of times ‘mobile phone’ appeared compared with the number recorded for each of the other three terms.

While one cannot be sure of the factors that gave rise to this situation, it is evident that, in students’ interpretation of the essay question, the term mobile phone emerged as the primary term that they needed to focus on. It is also likely that this term was the main key word used to guide their search for sources relative to the essay topic. Alternatively, to the extent that other key words were used, and appeared in the documents sourced, these were not accorded the same importance in the constructing of the annotations and were largely ignored.

7.2 Frequency count of key terms in relation to one another

When one looks at the essay topic closely, it becomes evident that what is needed is not simply that all key terms should be equally represented in the annotations, but that they should be used in relation to one another. This way of viewing the terms is mirrored in the topic itself. It can be argued that one important way of showing that relationship is to use the relevant terms in the same sentence, or, in the context of this study, in the same unit of meaning. This only happened minimally between the term ‘mobile phone’ and any of the other terms.

A further examination shows that of the thirty one (31) times that the term ‘landline’ appeared, it was used in the same unit of meaning with the ‘mobile phone’ twenty eight (28) times. What this indicates is that of the few student teams that recognized the landline phone as an important component of their search, the majority of them also considered it important to recognize a relationship between the two communication devices.

The following are examples of how relationships manifested themselves in the annotations.

Exhibit 3: Examples of units of meaning showing two terms in relation to each other

- MP 17:** Relevant background information is given about how it [the mobile phone] has made significant changes to people’s lifestyles as compared to the fixed line.
- MP 103:** [The case study] is about managing communications repertoire in relation to mobile versus landline.
- MP128:** Also, this source presents information in relation to the number of households which may be considered cell phone only or landline only households.

It is important to note that at this stage of the analysis, no attention is paid to the nature of the relationship and whether the way terms are used in relation to one another, adequately serves the requirements of the essay topic. All that is acknowledged is that by using the terms in close proximity to one another, there is a recognition of a relationship.

7.2.1 Possible factors impacting lack of attention to relationships

Any reading of the essay topic would reveal that the intention was that the two technologies would be compared on the basis of their impact on people’s lifestyle. However it is likely that two factors may have influenced the focus on one at the virtual exclusion of the other.

One factor may have been the structure of the topic. One notes that ‘mobile phone’ is in a beginning dominant position and thus, is positioned to impose that dominance on the mind of the undiscerning reader. In contrast, ‘the landline equivalent’ does not enjoy a similar dominant status: even though there is an intention to establish a comparison and contrast between the two technologies, the two are not in close direct proximity to each other to make that intention clear. The expression ‘landline equivalent’ is far removed from its counterpart, occupying a weaker position towards the end of the sentence.

Reinforcing this contrast in status as defined by the structure of the sentence is the high profile and widespread usage that the mobile phone enjoys as an emerging technology in contemporary times. It is likely that this socio-cultural factor may also have influenced students to focus more attention on the newer device. Whatever the reason, it would appear that factors influencing students’ perceptions about what has emphasis and what does not, in an essay topic warrants some examination.

7.3 Classification and coding of principal verb

The principal verb was isolated for analysis as it was felt that, in light of its role of introducing the core content of the unit of meaning, it would embody features that could shed light on the nature of the follow-up content. This expectation of the verb emanates from the hierarchical arrangement as presented in various taxonomies, the most well-known being Bloom’s Taxonomy.

Closer examination showed that there was a wide variety in verbs used across the 164 meaning-units. However this variety was not matched by any significant variation in the functions they performed. Essentially, all verbs were used in a reporting capacity, linking the source of the information with the actual information reported. In this regard, the agent of the verb was typically either the author, or the name of the type of the source document (article, paper, chapter). Following are examples of the verb performing the task outlined above.

Data ID	Agent of verb	VERB	Verb Extension
MP29	She [the author]	HIGHLIGHTS	The point that cell phones may have been originally intended as gadgets.
MP32	Chitali Sinha	ARGUES	That mobile phones are quickly becoming an affordable, useful and accessible tool to marginalized communities.
MP38	Mark Hickey	ANALYZES	The impact of wireless technology ... emphasizing on the effect it has brought on developing nations.
MP55	She [the author]	POSTULATES	That the mobile phone provides the user with more benefits than the landline phone.
MP154	The report	FOCUSES ON	How makers of cell phones, unlike landline, have come up with more enticements ...

Table 3. The reporting role of the principal verb.

Even when higher order verbs were used, for example, ‘analyzes’ and ‘argues’, their use was not done in a way to reveal the higher order processes inherent in the meaning of the term. Essentially therefore, like the others, theirs was an information-transmission role.

While the above reflects the way verbs were used in the data collected, there was a minority set that did not conform to this pattern. In these cases, the agent of the verb was some entity or situation that the unit of meaning was making some statement about. Two examples are as follows:

Data ID	Agent of verb	VERB	Verb Extension
MP23	The use of cell phones	HAS REDUCED	The chance of people conversing with strangers.
MP48	Mobile technology	IS EVOLVING	On a daily basis.

Table 4. Exception to standard verb function.

7.4 Classification and coding of units of meaning

Except in a few cases, all of the essential meaning-bearing content of the annotations was contained in the verb extension. This was not unexpected since students were basically following the standard format for writing an annotation, as already observed in the coding of the principal verb. This data was analyzed to identify the nature of the content students were using to construct the summaries that, as mentioned before, comprised the annotations. In this phase of the analysis, the deductive approach continued to apply not only with reference to the essay topic but also against the backdrop of established criteria for writing a summary. However, the inductive was also applied at this stage since one also needed to examine attributes inherent in the text to identify what they revealed about the strategies the students were using to construct their summaries. Based on a preliminary review, four categories of text were identified.

7.4.1 Category #1 – Overview

One category was viewed as providing overviews about what the original document was conveying about the topic or object of interest. A unit of meaning was classified as an ‘Overview’, if it appeared to be painting a broad picture of some item or object within it. In the context of this study, that item or object was, in most cases, one of the key terms identified earlier, or a combination of more than one of these terms. While this was the typical situation, in a few cases, other terms occupied this position. Whether as a single item or as a combination, this entity was deemed to be the focal point in the Overview. A second feature of the unit of meaning classified as an Overview was that, in relation to the focal point, it only provided broad information without going into specific details. However, in the third feature, some element of the text in the unit, served as an indicator of specifics about the focal point that would come later in the annotation.

Exhibit 4 demonstrates the analysis outlined above. Note too that, as stated earlier, it is the verb extension that is the basis for this analysis.

Exhibit 4: Analysis of category # 1 text

Data ID:	MP15
Verb extension	... the change that the mobile phone has made on citizens by creating new forms of expression
Key terms:	change, mobile phone
Focal point:	combination of 'change' and 'mobile phone'
Indicator of likely follow-up specifics:	new forms of expression
DataID:	MP39
Verb extension	... also two major ways in which mobile phones has brought about changes in lifestyle.
Key terms:	mobile phones, changes, lifestyle.
Focal point:	all three terms combined
Indicator of likely follow-up specifics:	two major ways.
Data ID:	MP89
Verb extension:	... the results of a survey questionnaire ... designed to assess the motivation of college students who use the mobile phone to connect with family and friends.
Key terms:	mobile phone
Focal point:	combination of 'college students', 'mobile phone', 'connect with family and friends'
Indicator of likely follow-up specifics:	assess motivation
Data ID	MP103
Verb extension	About managing communications repertoire in relation to mobile versus landline
Key terms:	mobile, landline
Focal point:	combination of 'mobile' and 'landline'
Indicator of likely follow-up specifics:	managing communications repertoire

7.4.2 Category # 2 – Superimposition

Segments that fell within the second category were essentially linguistic constructions that closely mirrored the content and structure of the essay topic. Such constructions seemed to represent a strong effort to ensure that one did not drift far away from the perceived requirements of the task, and that one stayed on target and 'answered the question'. The term 'superimposition' was used to define these segments since their close resemblance to the essay topic suggested that rather than delving into the content of the selected article, the student generated segments of the text for the annotation based largely on a rearrangement of substantial portions of the essay topic. This presumed strategy thus meant that the act of writing the annotation was largely a superficial activity that entailed little or no engagement with the content of the selected source material.

In terms of its core attributes, a superimposition shared some similarities with the overview. First both were constructed around a focal point, which, in turn, was constituted out of one or a combination of the main terms. Both provided general information about the focal point. However, the critical distinction between the two was that, because the superimposition was so completely defined by the essay topic, it did not allow room for meaningful elements capable of forecasting well-defined additional information. In this regard, it is important to note that it is not that there were no additional elements; rather that if there were, they were largely non-descript and lacked the level of meaning and the force required to set the stage for further expansion.

Exhibit 5: Analysis of Category #2 text

Data ID:	MP4
Verb extension:	... mobile phone has dramatically transformed lifestyle in the last decade.
Main Terms:	mobile phone, transformed, lifestyle
Focal point:	combination of 3 main terms.
Indicator of likely follow-up specifics:	none identifiable
Data ID:	MP17
Verb extension:	... ways in which mobile communications have transformed people's lives
Main Terms	mobile communications, transformed, people's lives
Focal point:	combination of 3 key terms.
Indicator of likely follow-up specifics:	none identifiable.
Data ID:	MP24
Verb extension:	... many detailed paragraphs on the impact mobile phones have on people's lives.
Main terms:	impact, mobile phones, people's lives
Focal Point:	combination of 3 key terms.
Indicator of likely follow-up specifics:	none identifiable
Data ID:	MP118
Verb extension:	... the notion that mobile phones have so profoundly impacted people's lifestyles.
Main terms:	mobile phones, impacted, people's lifestyles
Focal point:	combination of 3 main terms
Indicator of likely follow-up specifics:	none identifiable.

One additional point about this category warrants further attention. Given the closeness between the overview and the superimposition categories, there was the possibility of a blurring of the boundaries between them. Earlier, it was noted that the defining feature separating the two was the absence or almost complete absence of an indicator in the superimposition type of unit that pointed towards subsequent details. Thus, except in

instances where there were actually no additional meaning-words in the text, the decision to locate the segment of text in one or other category was a judgment call.

One example of this was the decision to include MP39 in the Overview category and MP17 in this category. Both verb extensions are almost identical and the term ‘ways’ appears to perform the same function in both. The reason for the different classification was that in MP39, the phrase ‘two major ways’ was regarded as a credible indicator of follow-up specifics, while ‘ways’ in MP17, was not.

Ultimately, even though acknowledging the need to justify classification of these borderline cases, one can also argue that even within the Overview category, some terms may have been more efficient follow-up indicators than others.

7.4.3 Category # 3 – Detail

Verb extensions included in this category were viewed as providing specific details relative to the overall topic or theme of the annotation. In an ideal situation, such details would hinge on indicators identified in the Overview. For the purpose of this analysis however, there was no backward linkage and extensions were included in this category based solely on the criteria outlined above. It should also be noted that in all cases the entire verb extension constituted the detail.

Exhibit 6: Analysis of Category #3 text

Data ID:	MP6
Specific detail:	... facts that persons are giving up their landline phones for mobile phones.
Data ID:	MP75
Specific detail:	... that the advent and use of cell phones have broken down the boundaries that once separated work and family affairs.
Data ID:	MP88
Specific detail:	... how younger teens use the mobile phone to create their external social networks from home.
Data ID:	MP119
Specific detail:	... [the notion] that percentages of households with no landline phones are on the increase across major European countries.
Data ID:	MP143
Specific detail:	... how individuals responded to the availability of telephones whether privately owned or for public use.

It is likely that some or all of the segments that were identified for this category were extracted verbatim from the source material. While this sort of reproduction is not to be encouraged, it should not detract from the fact that specific details were considered as important elements to be included in the construction of the annotation. Two other points deserve attention.

The first relates to the absence of the other key terms of the essay topic from these verb extensions. This is in sharp contrast to those classified in the other two where there were a

high proportion of key terms or their close synonyms. Of particular interest here is that while no direct mention is made of ‘people’s lifestyles’ or ‘changes’ or other terms that closely resemble them, a large proportion of the examples were clearly representative of changes in lifestyle brought about by the social impact of the movement from the landline to the mobile phone.

The second point pertains to the classification itself. Some may argue that MP88 would fit more into the Overview category than this one. Given the interpretation of ‘Overview’ given earlier, one can argue that this phrase could lead to more specific details outlining the ways in which teens use their mobile phones for the purpose specified. While acknowledging this possibility, the decision was taken to include it as a detail of the broader more general and inclusive issues contained in the essay topic. Thus, even though it can yield its own details, in the context of this study, it is being treated as a specific detail.

7.4.4 Category #4 – Assertions

Items included in this final category are essentially assertions or generalizations that convey a clear position and were presented as if the writer was convinced that they could not be challenged. In this regard, even though the identity of the author was not usually revealed in the assertion, one can conclude that assertions represented the personal position of those who articulated them.

Preliminary analysis of the data set suggested three attributes inherent in this form of language use.

First, the agent of the verb was the entity about which the assertion was being made. It therefore stood out since, in the typical structure of the sentence in an annotation, it is the author of the source material, or the material itself that was the agent carrying out the act embodied in the verb. Secondly, the verb itself was in the present tense, or present perfect, conveying a sense that the claims made were timeless and universally relevant. Thirdly, there was no link to any source to substantiate the claims made.

While in the preceding categories, the verb extension was sufficient to represent the core attributes of the language type, in the case of assertions, the entire meaning unit was required, since the agent of the verb was needed to complete the meaning, as discussed above.

Exhibit 7: Analysis of Category #4 text

Data ID	Assertion
MP20	Mobile phones have provided lots of fun and convenience to people’s daily life.
MP48	Mobile technology is evolving on a daily basis
MP70	Mobile phones seem to have taken over the communication market.
MP108	The article categorically suggests that the use of cell phones are (sic) now empowering students to become self-directed learners.
MP148	Educators can take advantage of many special features of the mobile phone to improve learning in the classroom.
MP149	School administrators can create measures to improve discipline in the school through the use of the mobile phone.

Data MP70 was recognized as a member of this category, in spite of the somewhat tentative nature of the verb. The decision to include it was based on the fact that other attributes of the assertion were evident and the strength of the second part of the verb phrase could be viewed as overshadowing the caution in ‘seem’. Data MP108 was also acknowledged as a member of this category, notwithstanding the inclusion of ‘the writer’ as the apparent source. One wonders whether there was any evidence in the source material to support this ‘categorically’ stated fact.

7.4.5 Category # 5 – Unclassified data

The majority of the data were classified in one or other of the categories identified above. However there was a small minority that did not fit any of them. These remained unclassified. Two examples are as follows.

Data ID	Unclassified meaning units
MP73	This book excerpt is based upon findings derived from a series of surveys.
MP93	He used two papers to scrutinize his research.
MP134	Sun Kyong Lee pointed out that media uses were based on different studies.

Table 5. Unclassified data.

In light of the foregoing, Table 6 presents the frequency count of the codes generated from the classification of the meaning units.

Code	Number of units of meaning	%
Overview	56	34%
Superimposition	12	7%
Detail	58	35%
Assertion	19	12%
Unclassified	18	11%

Table 6. Frequency count of codes emerging from units of meaning.

To the extent that the writing of overviews and the selection and writing of details are two important tasks in the construction of an annotation, the evidence is that these two skills were well represented in the data set. Together they accounted for 69% of the meaning-units coded. However, it should also be noted that they were not used in relation to one another: one did not see the typical pattern of overview followed by supporting details in a given annotation. Instead both were used across different annotations.

In terms of summary writing for an annotation, the issue arises whether all relevant aspects of this skill were accounted for in the data set.

8. Discussion of emergent themes: Secondary level analysis

Further analysis of the data was carried out to determine what they revealed about the overall annotation-writing strategies of the students. Five such strategies were detected.

The first pertains to the approach adopted for identifying and selecting source material on which to write the annotations. Given the vast difference in terms of usage between the term ‘mobile phone’ and the other four, one may infer that the dominant search strategy employed highlighted that term above all the others. It is beyond the scope of this chapter to investigate how students approached the task of identifying key terms that would guide their search, and more specifically, how they decided which terms to include for the search.

A close examination of the essay topic seems to suggest that the term ‘mobile phone’ was in the dominant position at the beginning of the topic statement and that this, coupled with its heightened popularity in the wider society may have influenced the greater attention it received from students. What ever may have been the factors, it is evident that the search strategies used warrant further investigation.

As noted earlier, the tasks of writing overviews and highlighting perceived relevant details were generally well represented in the data set analysed. Given that these are widely regarded as core components of the more complex task of writing a summary, one may infer that students had knowledge of and were practicing these two summarizing techniques. However, as noted earlier, students’ knowledge did not seem to extend to the acknowledged relationship between the two.

One exception to this general pattern was observed in the following three meaning-units , taken from a single annotation:

Data ID	Meaning Unit
MP89	Chen discusses the results of a survey questionnaire ... designed to assess the motivation of college students who use the mobile phone to connect with family and friends. (Overview)
MP90	The results reveal that the mobile phone is helpful for students to gain socialization skills, coordinate with their families, and remain vibrant participants in a social network. (Detail)
MP91	Chen’s research also shows that, contrary to initial expectations that the mobile phone would lead to isolation and independence of young people from their families, it seems to increase the involvement and socialization with their families. (Detail)

The writer of this annotation was displaying a competency level in the writing of summaries that was of a higher standard than that exhibited by the other writers.

Looking at the overview in particular across the entire data set, it appeared that at times, this element served as a default strategy when students found it difficult to draw out the meaning of the details of the source material.

The following are to be noted in this regard:

Data	Meaning Unit
MP84	The focus was on three research questions which sought to examine the influences of generation and lifestyle factors to mobile phone.
MP143	This document explains the impact telephones had on the lives of people in earlier times.

Whether or not an overview was required at that point in the respective annotations, it would appear that detailed information had been suppressed and students were resorting to vague, non-specific utterances that were largely devoid of the core essence of the content of the source material.

A third area of interest emerged in what appeared to be a strategy to ensure the relevancy of the content of the annotation. It can be argued that some students seemed to be making a conscious effort to ensure that their output was consistent with the requirements of the essay topic. In short, they wanted to ensure that they were ‘answering the question’. As noted earlier, this sometimes meant the direct transfer of key terms from the essay topic into the annotation, as reflected in the items included in the category defined earlier as ‘superimposition’. This superficial approach meant that the annotation itself was not able to reflect the essence of the source material on which it was based.

A fourth area of interest was the use of assertions by some students in which they appeared to be advancing propositions as if they (the propositions) were emanating from the source material. One wonders whether this resort to what was essentially a personal position, through the use of the ‘grand statement’, derived from an inability to accommodate open-ended thought and the need to remain in the comfort zone of clearly-defined factual information.

The use of assertions may have also been propelled by an orientation towards more prescriptive rather than analytical modes of thinking, as implied in the tendency towards providing a solution in MP148 and MP149. Overall, what appears to be the case here is a need to define knowledge within firm boundary lines and it can be argued that the assertion provided the required mechanism for doing so.

Finally, the data analysed appeared to reveal a likely weakness in students’ capacity to engage in relational thinking that was able to observe and deal with elements of a body of knowledge in a manner that allowed a focus on the elements in interaction with one another rather than singly and sequentially. Such an approach to thinking would demonstrate an appreciation of the Gestalt principle of the whole being greater than the sum of its parts and conversely, the significance of viewing the parts in the context of the whole. As noted earlier a large proportion of the meaning units analyzed were focused on the mobile phone only. Even when the focus extended to include the landline phone, the context in which the two were being discussed bore little relation to that espoused in the essay topic.

Additionally, when the use of these technologies was shown as impacting life style changes, it was the impact of the mobile phone only that was focused on. For example, even though

acknowledging the quality of the segment of the annotation identified as MP89 to MP91 earlier, it should still be noted that here the focus is only on the role of the mobile phone in fostering the development of socialization skills in young people. The same pattern is evident in MP75. Indeed it can be argued that the weaknesses observed earlier in the searching strategies employed may also be traced back, at least partially, to a limited capability for relational thinking.

Finally, the question may also be asked whether all relevant summary-writing strategies as they pertain to the writing of annotations were present in the data analyzed. In this regard, it is important to note that students were required to develop the annotated bibliography in relation to a specific essay topic that they would write on subsequently. It was not being developed in relation to a general topic of interest. To the extent that there is a distinction between the two, and that there are additional strategies that apply in the first scenario that are not required in the second, this distinction was not evident in the data analyzed.

9. Conclusions

One of the main factors that influenced the decision to undertake this study was the perception that the outcome-oriented task-focused approach to providing guidelines for assisting students in developing information literacy skills, may not be sufficient to address the fundamental process skills that students need to apply in order to achieve the intended outcome. This view was also shared by the two library information specialists cited. In particular, one recalls Kavanagh's (2011) discussion about the research strategy log. This view also resonates with Ally's (2004) assertion that the developer of online materials must select learning strategies that, inter alia, promote meaningful learning and provide support during the learning process. It is envisaged that the findings of this study can provide a useful starting point for taking the design of information literacy instruction for online graduate students beyond the level of task-identification.

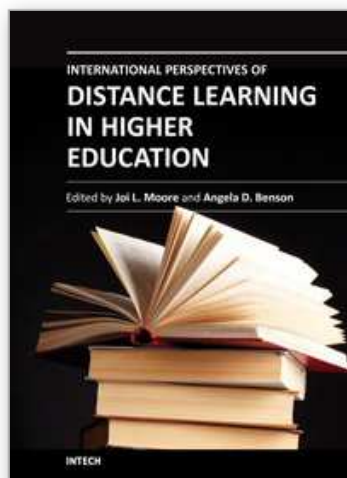
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This book, written by authors representing 12 countries and five continents, is a collection of international perspectives on distance learning and distance learning implementations in higher education. The perspectives are presented in the form of practical case studies of distance learning implementations, research studies on teaching and learning in distance learning environments, and conceptual and theoretical frameworks for designing and developing distance learning tools, courses and programs. The book will appeal to distance learning practitioners, researchers, and higher education administrators. To address the different needs and interests of audience members, the book is organized into five sections: Distance Education Management, Distance Education and Teacher Development, Distance Learning Pedagogy, Distance Learning Students, and Distance Learning Educational Tools.

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Slavka Krautzeka 83/A
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www.intechopen.com

InTech China

Unit 405, Office Block, Hotel Equatorial Shanghai
No.65, Yan An Road (West), Shanghai, 200040, China
中国上海市延安西路65号上海国际贵都大饭店办公楼405单元
Phone: +86-21-62489820
Fax: +86-21-62489821

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