CHAPTER 2
THEORETICAL AND CONCEPTUAL FRAMEWORK OF THE STUDY

2.0 Chapter Overview
This purpose of this chapter is to present a theoretical and conceptual framework which will be employed by this study. The theoretical and conceptual framework is based on the findings presented in the literature reviewed. This provides the framework for the research design and analysis. The following theories and theoretical frameworks served as a foundation for developing information literacy instruction module and the study.

2.1 Theoretical background of the study
A theoretical framework is a structure of concepts which exists in the literature, a ready-made map for the study (Liehr & Smith, 2000). The literature review highlighted research, current thinking, debates, issues and gaps in research. It revealed and consolidated the range of theory across several disciplines, but particularly within the broader education sphere, that needed to be considered in the development of the study and module as well as allowed for the testing out of this theory in practice within the context of the Information Literacy Instruction module.

2.1.1 Terminological Ambiguity: What is Information Literacy?
Information Literacy is considered essential for individuals to achieve their personal, social and educational goals. It is a key factor in producing effective lifelong learners and creating knowledge societies. The development of such skills takes place throughout the citizens’ lives, especially during the educational years where librarians and experts in information management play major roles in facilitating information literacy. However information literacy needs to be considered not only in relation to education, but also in the broader context of work, civil society, health and wellbeing (Garner, 2003). In spite of information literacy being one of the crucial factors for the literacy of the 21st century, there is a lot of debate surrounding the definition of information literacy.
Concept of information literacy:

Information Literacy is viewed by researchers and scholarly community from varying angles. Some of these ways of seeing are the outcomes of research; others are developed through scholarly reflection. Different views have led to different ways of describing information literacy. The most widely accepted description is based on the view that information literacy is an amalgam of skills, attitudes and knowledge. Thus information literacy is the ability to access, evaluate and use information from a variety of sources. Other descriptions are based on views that information literacy may be interpreted as the ability to learn, or as a complex of ways of experiencing information use. These descriptions are more aligned with seeing learning as a process, or as coming to see the world differently. Thus Carol Kuhlthau concluded that information literacy is not a discrete set of skills, but rather a ‘way of learning’. These ways of seeing are themselves fundamental to the development of information literacy research. They are likely to be influenced by, as well as to influence, variations in the other dimensions. Interpreting information literacy as skills or attributes may lead to particular kinds of investigations, whilst interpreting information literacy as ways of experiencing information use is usually associated with different kinds of investigations (Bruce, 2000).

There are several definitions assumed by associations and authors. The American Association of School Librarians (AASL), a precursor in the IL field, and the Association for Educational Communications and Technologies claim that “information literacy is - the ability to find and use information – is the keystone of lifelong learning” (Byerly, 1999). Under the component of information literacy, AASL states: “information literate student accesses information efficiently and effectively, evaluates information critically and competently, and uses information accurately and creatively”. Users “should have both information-gathering strategies and the critical thinking skills to select, discard, synthesize, and present information in new ways to solve real-life problems” (Byerly, 1999). This information literacy definition extends beyond library skills and beyond the use of discrete skills and strategies with the ability to use complex information from a variety of sources to develop meaning or solve problems (Kuhlthau, as cited in Stripling, 1999) (Kuhlthau, 1999). Christine Bruce recommended basing a definition of information literacy on the ways in which it is experienced by people. Through her phenomenographic
research she identified seven conceptions of information literacy among academics in Australia. These are Information Technology Conception, Information Sources Conception, Information Process Conception, Information Control Conception, Knowledge Construction Conception, Knowledge Extension Conception, and Wisdom Conception (Bruce C. , 1997)

A generally used definition
Attempts to define “Information Literacy” have been made for several years, mostly by librarians or professionals related to library science, and there are more similarities than dissimilarities in these definitions (Owusu-Ansah, 2003). The most commonly cited and used IL definition is the one adopted by the American Library Association (ALA), 1998: “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. The information literate individuals are those who have learned how to learn” (Lau, 2006). They know how to learn because they know how knowledge is organized, know how to find information, and know how to use information in such a way that others can learn from them (Byerly, 1999). “Whatever semantics we assume for the IL term, the ALA definition, itself, is broad enough to encompass the entire spectrum of information skills; from Inuit traditional knowledge to high-tech search engines, and will probably be applicable for many decades” (Campbell, 2004).

Review of the related literature suggests that information literacy is considered as skills, as a way of learning and also as ways of experiencing.

In the present research, Information literacy is seen as a process involving certain phases each with specific skills.

2.1.2 Information Literacy Instruction
Information Literacy Instruction is a medium through which students are trained to become information literate. Information Literacy instruction equips students with the necessary and crucial information and academic skills for lifelong learning. Haberle (Haberle, 2001) opined that Information Literacy intervention covers both lower and higher order skills as outlined in “Bloom’s Taxonomy of Educational Objectives”. He suggested three steps for information Literacy interventions i.e.:
Orientation: to recognize a need for information and to familiarize oneself with the library and its resources.

The interaction stage requires of students to perform a search in the library to satisfy an information need and when users have progressed to the internalization level, they should be able to use the library on a continuous basis to fulfill information needs in all aspects of their life, thus becoming daily, life-long information consumers that most closely matches the characteristics of information literacy.

Internalization means to be able to compare and evaluate information from different resources; to be able to organize, use and communicate information; to produce and present an organized piece of work and to synthesize and build new knowledge based upon existing information.

An intervention developed by researcher used Kuhlthau Information Search Process as a model and constructivism as learning theory and active learning as a teaching strategy.

2.1.3 Kuhlthau’s Information Search Process Model

Carol Kuhlthau’s Information Search Process Model has influenced the field of Information Science greatly and is based on her empirical research. Her research shows that information seeking is a constructive process of making meaning. This model is important for information literacy instruction in the context of the library because it shows that user education does not involve simply showing how to fetch the right piece of information from the shelves or a database. Kuhlthau offers the Information Search Process as a heuristic for understanding the stages through which any individual passes as she seeks to fulfill information needs. As the individual addresses and resolves her information need, Kuhlthau argues, she passes through six stages of varying emotional certainty and confidence, as well as cognitive clarity and focus. According to this model, students undertaking the search should have understanding of what they need and why. They then need to assimilate new information into their existing knowledge in order to build new meaning. ISP model has three realms of the information seeking process: affective (feelings), cognitive (thoughts) and the physical (actions). As students move progressively through the processes they solve problems cognitively, experience emotions of anxiety and uncertainty to confidence and use certain strategies and action. By acknowledging and validating the thoughts, feelings, and actions that the individual is likely to experience
as she attempts to resolve information need. Kuhlthau claims, librarians are more likely to foster positive, lasting research practices (Kuhlthau C. C., 2004). Following are the different stages in the Kuhlthau’s ISP model as shown in figure

Figure 2.1 Kuhlthau’s Information Search Process Model

<table>
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<th>Model of the Information Search Process</th>
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<td>Initiation</td>
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| Initiation: | The first stage identified in the Information Search Process is task initiation, during which the individual recognizes a need for information in order to complete a task or assignment. This stage is often accompanied by feelings of uncertainty and apprehension, and involves thinking about the task pursuant to comprehending what needs to be known or done to achieve success. This stage brings awareness that there is a lack of knowledge or understanding of the topic. At this stage the student merely recognizes that there is a need for information. The outcome is to discuss the topic and its approaches. As the student reads widely around the topic he/she will be ready to form a focus which will guide research.

Selection stage: here the student selects the general topic to be investigated. During this stage, the individual’s uncertainty tends to lessen, and is replaced by optimism as she prepares to begin her research.

Exploration: This stage is characterized by feelings of confusion. Here the student tries to become oriented and informed about the topic to form focus. Students often find this stage discouraging, threatening and frustrating. During this stage, Kuhlthau explains, “information encountered rarely fits smoothly with previously held constructs, and information from different sources commonly seems inconsistent and incompatible.” Because of this, the individual’s optimism is likely to be overcome by
feelings of confusion, doubt, uncertainty, and sometimes threat. It is during this stage that the individual is at greatest risk of losing motivation, and of falling back into the inertia of bad habits (e.g., relying solely on Wikipedia or other non-peer reviewed sources).

Formulation: During this stage feelings of uncertainty diminish and confidence levels increase because students gain a sense of clarity about the topic. This stage, Kuhlthau claims, “is for many the turning point of the search process,” when researchers begin to feel confident about their work and with their ability to assess and assimilate information as it pertains to their topic.

Collection stage: In this stage students gather information related to the assigned topic. As the student is focused and clear on the topic, they search in all available resources. At this stage, as the individual realizes the scope of the task at hand, confidence, interest, and motivation increase, and uncertainty subsides.

Presentation stage: at this stage the student experiences a sense of satisfaction or disappointment if the search has not gone well. (Mortimore, 2010)

Based on the guidelines suggested by the model, learning theory and teaching strategy was selected.

2.1.4 ACRL information literacy competency standards for higher education

The ACRL Information Literacy Competency standards for higher education were published in 2000. These standards are built on the Kuhlthau’s ISP model as they seek information seeking and handling to be processed with interdependent phases. The researcher has used ACRL guidelines because they provide competency level to assess students’ abilities. ACRL has five standards and twenty five performance indicators. Standards are structured in a logical hierarchy where each standard leads to several performance indicators and outcomes. A performance indicator answers the question “What do we want the students to learn?” Learning outcome answers the question “How do we know that the student has learned?” (ACRL, 2000)

The standards are briefly listed below:

Standard One: The information literate student determines the nature and extent of the information needed.

Standard Two: The information literate student accesses needed information effectively and efficiently.
**Standard Three:** The information literate student evaluates information and its sources critically and incorporates selected information into his or her knowledge base and value system.

**Standard Four:** The information literate student, individually or as a member of a group, uses information effectively to accomplish a specific purpose.

**Standard Five:** The information literate student understands many of the economic, legal, and social issues surrounding the use of information and accesses and uses information ethically and legally.

The ACRL standards selected for the present study are listed in Appendix 1.

### 2.1.5 Learning Theory

**Behaviorism**

Behaviorism sees observable change in behavior.....patterns are repeated in learners until they become automatic (Huit & Hummel, 2006).

According to Skinner (1938) behaviorist believe that learning takes place when prompted by a stimulus and shaped by repetition/reinforcement (Skinner, 1938). By rewarding learners for a correct response, desirable behaviors are reinforced. In the stimulus reinforcement consequences model students know that mastering the content presented by an expert will bring rewards. Many educational systems are built on the beliefs of behaviourism (Guistini, 2008).

This learning occurs as a result of observable changes in human behavior that are acquired through conditioning, a process achieved by interactions with the environment (Brown & Green, 2006). If no changes are observed in behavior, learning does not occur. From behavioral perspectives, internal and cognitive processes are invisible and cannot be studied scientifically, thus the outward behavior is the key indicator of human learning. In behavioralism, there is a relationship among three factors: antecedent conditions (stimuli), behaviors (responses), and consequent conditions (rewards or punishments) (Bigge & Shermis, 2004) (Lefrancois, 2000). In this model, a response can be predicted when a stimulus is given. This might encourage teachers to use a positive stimulus (e.g., smile, praise, friendly attitude) to increase a desired response from students (e.g., hard working, motivated attitude), which may lead to a positive consequence (high achievement). Similarly, a negative stimulus (e.g., frown) can discourage an undesirable response (e.g., students talking), which can lead to a decrease in negative behavior.
According to behavioral theories, teachers can play a significant role in effecting learning in determining what to teach with objectives based on the desired behavior. Another important element in behaviorism is the *transfer of learning*; in which skills, knowledge, and attitudes learned in a specific context can be transformed and applied to a new setting (Orlich, 2004). The transfer of learning shows the ability to connect theoretical orientation and practical application and to apply what one has achieved in the learning process to real-life situations (Pham, 2011).

Information literacy is understood and explained as the process of equipping individuals with discrete competencies and skills and is defined by objectives and outcomes. This understanding has dominated the literature and is widely espoused. The focus on skills has contributed to what is referred to as the behavioral approach to information literacy. The behaviorist tradition posits that learning is the result of observable changed behavior with the learner displaying sequential skills and competencies (Kerr, 2010).

*Constructivism*

Kuhlthau’s ISP model is based on the constructivist theory of learning. Even though constructivism is a widely discussed topic in the literature, there is no consensus about its definition or character. According to Windschitl (2002) the premise of constructivist learning is that individual constructs their own knowledge which may be mediated by their social environment (Windschitl, 2002). The extent to which learners construct knowledge and indeed meaning, is affected by their personal characteristics, prior learning and experience, frames of reference and environment as well as instruction.

In terms of instruction, learning must be active, situated in authentic tasks, usually problem based, interactive and includes reflection. Role of teacher is that of facilitator. Learning is scaffolded and focuses on helping learners understand. Teaching to accommodate learners in the constructivist paradigm assumes multiple teaching and learning activities and assessment (Kuhn, 2008).

In the constructivist classroom the following are likely to be found

- clear conceptual goals and an understanding of the activities needed to help learners progress towards these goals;
- acknowledgement of prior learning and awareness of the diversity of learners;
teaching and learning activities that facilitate and challenge access to new ideas;
provision of situations for learners to apply knowledge to a range of new situations;
a cooperative and engaged classroom environment;
teachers draw ideas and information out of learners around particular topics and then provide learning scenarios for these ideas to be developed;
learners engage in problem-solving activities and are involved in constructing arguments based on evidence, as well as explaining, predicting and interpreting;
teachers make explicit their own thinking processes and learners are encouraged to do the same through various forms of representation, as well as reflect;
learners are provided with information resources and tools for learning;
teachers employ a variety of assessment activities (Windschitl, 2002).

The module incorporates both behaviorist and social constructivist approaches to learning. The module designed to incorporate the constructivist approach to learning as it was assumed that people are actively involved in creating meaning and that these meanings are mediated through communication. Teaching and evaluation methods used by the researcher like a pre-test, post-test and the teaching of the specific skills that assumed that certain skills would be learnt and demonstrated were used that stem from behaviorist approaches to learning. Similarly there was emphasis on the communication and sharing of ideas and reflective learning.

2.1.6 Teaching strategy

Active learning

Active learning is the provision of learning activities that require active participation by learners, not just physically but mentally as well in a range of ways (Silberman, 2000). “Active learning is a multi-directional experience in which learning occur teacher-to-student, student-to-teacher and student-to-student.” Activity based experiences involve input, process and output. Input comes from multiple sources via many senses for example, hearing, seeing; the process involves interacting with other
people and materials and output involves production of a response, solution or answer or evidence. These multiple experiences take many shapes such as working in pairs, groups, individually and so on; and many forms such as talking, writing, debating, reading and the like. “When learning is active students do most of the work” (Silberman M. L., 1996). A holistic approach to active learning includes getting ideas and information (access), experiences (doing and observing) and reflection (on what and how) (Fink, 2003).

Active learning comprises three interrelated factors: these are the skills or activities of reading, writing, listening, talking, and reflecting; use of a variety of teaching resources and employment of a range of learning strategies such as group work, games, and practical exercises and so on (Meyers, 1993).

Gedeon (1997) has pointed out the problems of using the active learning approach with large groups. In higher education it is generally acknowledged that useful participation is difficult with large groups because such groups are difficult to control and feedback is limited with some students feeling intimidated by large numbers and therefore unwilling to speak out (Gedeon, 1997).

The module specifically included all of these as well as a formal reflection exercise where students were asked to comment on their experience of the content and processes of the module. The reflections of the students indicated that this exercise had provided them with an opportunity to assess their learning, and that indepth learning had taken place.
2.2 Conceptual Framework of the Study

Conceptual framework helps to identify key concepts, draw relationships, and highlights meaningful interactions between the concepts that have emerged from the literature

2.2.1 What is Information Literacy?

For the present research Information literacy is seen as a process involving certain phases each with specific skills.

Figure 2.2 Components of Information Literacy Skills

![Diagram of Information Literacy, Research Process, and Research Skills]

2.2.2. Research Process

According to Online Library Learning Center Glossary (Glossary) “Research Process is defined as a series of steps which make up research from development of an idea to the completed research paper. “

For the present study, the research process is conceptualized as steps for effectively locating information for a research project.

Research is the persevering, thorough study into a subject that requires time and effort. It is a cyclical process that is presented as a step by step activity. It is usually associated with a careful investigation of many different research tools and visits to a library. The process of conducting research can be broken down into the following
activities. These are not necessarily distinct steps which can be undertaken in a set order one after the other, the process of conducting research will vary according to the research subject.

2.2.2.1: Steps in Research Process

The following are the steps in the research process:

*Analyze the research subject:* In this step students in consultation with the teacher will need to clarify the research subject by establishing the scope of the research and identifying keywords and then trying to locate basic information on the subject.

*Identify research tools and collection to use:* in order to find the resources for research topic, one will need to make use of a variety of research tools. Students will have to keep a record of research tools searched, and also the keywords or topic words used in search, to avoid repetition. Students may also need to visit a number of different collections located in institutions such as libraries, museums and record offices during research.

*Locate and obtain resources:* Use the research tools identified to search for relevant resources. It may be necessary to use a range of methods to obtain physically or gain access electronically to these resources.

*Read and evaluate:* in this step students will need to determine the relevancy of the sources used which can help to decide what books and articles will best support the research topic. A well-defined topic is important. Number of irrelevant materials will be eliminated after having a clear idea of what is needed. Once the list of sources is ready, there will be need to evaluate what has been found. There are five criteria to be considered in evaluating information sources, these are authority, accuracy, objectivity, currency and coverage.

*Presenting:* The final step in the research process is comprised of the actual drafting, writing and revising. Whenever students are doing research it is necessary to keep a record of all the materials used. It is important to note complete citation details according to the citation style suggested by the guiding teacher.

Research, like any other academic activity or proponent, is governed and guided by a number of policies and rules, particularly on ethical issues. These guidelines protect the intellectual rights of the authors. This failure to comply with the rules set forth in the research would definitely result in a violation. The most common policy that is predicated on protecting the authors’ intellectual work/s is copyright. The aforementioned rule is given to authors of any material that is usually related to mass
communication, such as books, articles among others. A violation of this law is called infringement and is usually fined by a relatively high amount of damages, plus other possible legal penalties. Another form of violation is plagiarism or the direct use of the certain work of another person as the one who copied the said work claims it to be his own. Thus, the researcher must always practice quoting the author of his borrowed material to avoid violations.

As the research process involves identifying, locating, assessing, analyzing, and then developing and expressing ideas. These are the same skills which are needed in the real world when students produce reports proposals or research for the employer hence it is necessary to develop an understanding of the research process among the student teachers.

The research process provides one with necessary foundation and skills in locating information to complete an effective research. There are a number of steps to be followed, regardless of the topic. Developing the habit of going through these steps to tackle information problems anywhere and one will learn about anything that interests one at any time in life.

2.2.2.2 Need of studying the research process

Today’s generation is IT literate and usually master basic IT skills. They use email and chat and consider web as their primary resource. They generally use the web as their research tool whatever their research problem (Harley & Dreger, 2001). They show a preference for simple and neat search engines such as Google and feel that reading instruction or search tips is not a useful activity (Lorenzen, 2002). So they usually carry out very simple and primitive searches, sticking one or two words in a search engine (Tolar Burton & Chadwick, 2000). Students are very confident in the capability of search engines in providing a “right” answer to their questions and when they do not find the information they were looking for, they think that “there isn’t anything” and rarely try another kind of search or other information source (Brown & Murphy, 2003) (Ray & Day, 1998). Students perceive themselves as proficient in locating information online and do not ask the librarian for help during their search (Conteh-Morgan, 2001) (D'Esposito & Gardner, 1999). At the same time, they appear full of anxiety and lack self-confidence when required to do assignments needing
information seeking skills. The most critical steps in their inquiry process are the “initiation” and the “formulation” (Kuhlthau C. C., 1993; Leckie, 1996). They find it difficult to recognize and express their need for information and to define the focus of their research process. The library is generally considered as a place to stay and study where books can be borrowed. Students are not aware of the library catalogue and its uses. As a result, students have never used the catalogue. Students prefer browsing through the shelves to locate books, which can lead to frustration and which has caused many to view the library as just a reading place (Ebiwolate, 2010). Library tours and short instruction sessions seem to be appreciated, but they do not have a real impact on the way students approach information problems. Most students’ information and learning needs remain unexpressed and can be perceived and interpreted only by paying attention to those signs of anxiety, uncertainty, impatience that they show, when involved in research activities, without asking for help (Gatten, 2004) (Hager & Sleet, 2003) (Whitmore, 1998). Thus the review suggests that students

- find it difficult to express their need for information
- lack understanding of tools like catalogue and classification
- lack appropriate strategy in using information
- lack knowledge of referencing
- find the library a place to study and borrow books

From the review of related literature it can be seen that students in general lack knowledge about the research process. Considering these factors research process was included as a component of the information literacy.

### 2.2.2.3 Aspects of Research Process

The present study focusses on developing the understanding of the research process among student teachers. After reviewing the literature, the researcher has shortlisted, a few aspects which are important for developing understanding of the research process among the B Ed student teachers. For conceptualizing the components of the research process, the following aspects were considered.
For the purpose of the study information research process was defined as steps for effectively locating information for the research project.

**Research Readiness:** In the present scenario, it is very important to help student teachers understand the importance of cataloguing and classification as a tool and a means of organizing information in the library. Thus, there is a need to discover the understanding among the student teachers regarding the library catalogue and classification.

**Research Needs:** 'Need' is a fact of or feeling of the lack of something. It can also be seen as that which a human being should have to function effectively. According to Kituyi-Kwake (2007) an information need is present when a gap, uncertainty or deficiency in a person's cognitive state is recognized. He notes that the deficiency prevents a person from making sense of the surrounding world (Kituyi-Kwake, 2007). In the research process when an assignment is announced it is necessary to identify what exactly needs to do and how much research has been done on the subject. Knowledge and understanding of the research needs prevent research anxiety and saves the time of the student. In the present research understanding of the students regarding the project and information sources is assessed.
**Research Strategy:** As research is a time bound process, developing a strategy for doing research is a must. If there is no strategy student will end up wasting time in doing repetitive things and this may lead to increase in anxiety and loss of confidence among student teachers. In the present research, understanding of the students regarding strategy applied when framing research question, using the library and recording citation is tested.

**Research Reporting:** understanding of research reporting helps in presenting the information obtained through research. Here an understanding of the importance of citation and citation style is considered.

In general, most student teachers lack information literacy skills. Thus exposing student teachers to the different aspects of the research process like research needs, research strategy and research reporting will create an understanding about the research process and help student teachers to train and develop the positive attitude about the research.

2.2.3 Research Skills

According to Online Library Learning Center Glossary (Glossary)

“Skill is defined as the ability to do something”

In the present research, research skill is defined as the ability to identify a problem, determine what sorts of informational resources are needed to respond to the problem, find those resources efficiently, evaluate the gathered information for quality and relevance, and use the information effectively to address the problem.

2.2.3.1 Need of studying the research skills

According to William Badke the biggest blind spot in higher education is mistaken notion that college and university students, with all their technological abilities have no need of research skill instruction (Badke, 2012). Studies have shown that estimations of student technological skill levels are overblown and that students do not develop research skills without extensive instruction, whether they are younger or older. Until we begin addressing the research skill needs of all of our students, the blind spot will remain, and we will send out graduates that, in one major respect, are not fully educated. Despite the wealth of information available on the internet, a recent study suggests that many students lack basic research skills. The latest Project
Information Literacy Report found that students reported twice as many frustrations with conducting course-related research as they did with “everyday life research”. They also expressed frustration with identifying, accessing, and/or locating resources in the library (Head & Eisenberg, 2009). Students typically used Google initially, followed by blogs and Wikipedia. Students did not use libraries and did not find library instruction helpful. Burton & Chadwick (2000) found that for students the most desirable source for them was a source that is easy to find, easy to access, easy to understand, and available when needed. They also placed a high value on up-to-date information, primary sources, the reputation of the publication and the author, but they were not concerned about the publisher’s reputation (Burton & Chadwick, 2000). Most of the students claimed to understand the definition of “peer-reviewed” or “refereed” but they did not seem to recognize the value of citations in references for locating additional information. Twait (2005) concluded that evaluation skills are lacking in and needed by undergraduate students (Twait, 2005). Abdullah (2007), conducted a study with university students found that students lack skills in ethical and legal use of information (Abdullah, 2007).

From the review of related literature it can be seen that students in general lack research skills. Considering this research skill was included as a component of the information literacy.

2.2.3.2 Aspects of Research Skills

Different researches conducted, have shown that students in general lack research skills. So it is necessary to train them these skills.

After reviewing the literature, the researcher has shortlisted a few aspects which are important to develop research skills among student teachers. For conceptualizing, the components of research skills, the following aspects were considered. Figure 2.4 shows the aspects of the Research Skills.
Research Needs:
As novice researchers, students usually do not know enough about a specific discipline to choose a focused avenue of research and to develop a researchable question.

There is however an important library tool that can be useful to students as they work to develop their research question: subject encyclopedias, but they usually unaware of their existence. As a result they search on internet at random and surf unreliable sites resulting in a topic that is too broad or overused. Thus there is a need to develop in students’ ability of identifying the topic, converting the topic into the researchable question, identifying keywords and getting background information

Accessing and locating skills
After developing the research question, students are ready to plan their search strategy. The main issue facing students at this point is where to look for information and the first place where student look for information is the internet. The problem arises when students approach academic research in the same way they manage their daily internet use. Students are typically unaware of the existence of and differences
between the public and online subscription databases that university library and other institutions use for specialized research. These databases are chosen according to strict criteria of content, reliability and usability. In order to search these databases it is necessary that students know how to compose their search statement. In addition to this there are different tools like indexes, a catalogue which can be used. Thus it is necessary that accessing and locating skills are developed among the students so that they can identify the synonyms, developing different search strategy through use of different operators and truncation, use of different tools like library catalogue, indexes for accessing the information, reading citations and citation elements for locating information.

**Evaluating skills**

While carrying out research, students will gather large amount of materials from a wide range of sources. It is important that this information is appropriate for use in academic work. Because not everything which is available is of good standard, especially the information retrieved from the web. Students should be able to think critically and judge what is irrelevant and appropriate. Thus developing evaluating skills will help students in all aspects of their studies and beyond. It is an essential skill, valued highly by the academics and future employers.

**Ethical Use of Information**

After evaluation, this information is used by the students to prepare a project. When someone else’s work is used, it is ethical to give credit to the original creator. This can be done by giving a citation which indicates who the original creator is and where the item was found. When a student use someone’s work on their project without giving credit and projecting it as their work, though it is unintentional it becomes plagiarism. Students can be disciplined for academic dishonesty resulting in a variety of consequences depending on the severity of offense.

**2.2.4. Content of the Module:**

Based on the theoretical and conceptual framework, the module was conceptualized. The researcher created three modules according to the stages of Kuhlthau’s Information Search Process. In the first step of task initiation, researcher oriented students to the thoughts and feelings experienced by students while completing the research project. This way by addressing students’ feelings of uncertainty and apprehension, researcher validated and established empathy between her and the
students. Kuhlthau’s first, second, third and fourth stage (Initiation, Topic Selection, Prefocus Exploration and Focus formulation) were covered in a module on Research Success. In this module students were guided through a process of topic selection. General reference sources, information sources and their structure were introduced. Developing the focus through the process of concept mapping was shown. Identifying the keywords and synonyms were also mentioned. Kuhlthau’s fifth stage of information collection was addressed under module on ‘Re-Searching’. This module oriented students’ to different search tool, search techniques, search types, search engines and criteria for evaluating information. Stage six ‘Search Closure’ was addressed under the module ‘Research Ethics’. This module dealt with plagiarism and ethical presentation of information through proper citation. Throughout the session the researcher was careful to keep focus on the research process and students’ thoughts, feelings and actions. The expectation was that by focussing on students’ research anxiety through meaningful engagement with the research process, the librarian may mitigate the negative effects of students’ confusion, doubt and uncertainty, especially during task formulation and pre focus exploration (Kuhlthau C. C., 2004). Following figure gives mapping of information literacy instruction module with Kuhlthau’s Information Search Process (ISP) Stages.
Table 2.1 Mapping of Information literacy Instruction Module with Kuhlthau’s Information Search Process (ISP) stages

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<tr>
<th>Research Process</th>
<th>Kuhlthau Information Search Process</th>
<th>Research Skills</th>
<th>Module Title</th>
<th>Active learning strategy</th>
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| Information Research Readiness | Task initiation                  | Library Skills  | Research Success | • Group Work
|                           |                                    |                 |              | • Demonstration          |
| Information Research Needs | Task Initiation, Topic Selection, Prefocus exploration, Focus formulation | Research Needs | Research Success | • Group work
|                           |                                    |                 |              | • Concept mapping        |
|                           |                                    |                 |              | • Worksheets             |
|                           |                                    |                 |              | • Quiz                   |
|                           |                                    |                 |              | • Reflection              |
| Information Research Strategy | Information Collection           | Accessing and locating skills, Evaluating Skills | Searching Basics | • Demonstration
|                           |                                    |                 |              | • Lab work                |
|                           |                                    |                 |              | • Worksheets             |
|                           |                                    |                 |              | • Quiz                   |
|                           |                                    |                 |              | • Reflection              |
| Information Research Reporting | Search Closure                  | Ethical use of information | Research Ethics | • Group Work
|                           |                                    |                 |              | • Preparing Bibliography |
|                           |                                    |                 |              | • Worksheet              |
|                           |                                    |                 |              | • Quiz                   |
|                           |                                    |                 |              | • Reflection              |
2.2.5 Structure of Information Literacy Instruction

In the present study, Information Literacy Instruction was developed to enhance the information literacy skills of student teachers. Following is the detailed structure of the treatment

Figure 2.5 Structure of the Treatment

The above figure gives a detail description of the steps used for conducting information literacy instruction modules

2.3 Summary

This chapter has presented the theoretical and conceptual frameworks associated with a study based on past research. It clarified the concept of information literacy and the importance of the knowledge and understanding of the research process and research
skills. The conceptual background thus confirmed the variables and generated interest in studying them.

The next chapter, Chapter three, presents the literature review which underpinned the current research. This literature review covers the topics of information literacy, standards, models, teaching and assessment.