METHODOLOGY OF THE STUDY

The chapter has been entitled 'Methodology'. Methodology is the generalization of techniques and concretization of philosophy (*Keeves, 1998*). Further, Keeves states that method as a discipline lies between two poles. 'On the one hand, it refers to techniques, the study of specific techniques of research and on the other hand is philosophy of science, the logical analysis of concepts presupposed in the scientific enterprise as whole evidence, objectivity, truth or inductive inferences'. In the words of (*Bailey, 1978*) 'methodology' signifies the philosophy of research process. This includes the assumptions and values that serve as rational of research and the standard or criteria that the researcher uses for interpreting data and reaching conclusions.

A methodology refers to the philosophical framework and fundamental assumptions of research (*Van Mahen, 1990*). Cresswell sums it up as a "framework that relates to the entire process of research". Research is a systemic and controlled study under which corelational and comparative study of variable is made through proper statistical and scientific methods. Similarly, *Webster (2000)* has defined methodology as the science of method or arrangement. Method is defined as orderliness and regularity or habitual practice of them in action. The methodology is decided with reference to research or the type of inquiry. Research methodology involves systematic procedures starting from the initial identification of problem to its final conclusions. Its role is to carry on the research work on the scientific and valid manner. It provides a tool and techniques for conducting a study. It involves such general activities as population, sampling techniques, tools, data collection, analysis of data, interpreting results. Thus it consists of all general and specific activities of research.

The present chapter describes the method and procedures applied in the research. Since, research methodology is a systematic way to solve a problem and it deals with methodological tools, which are used to achieve objectives of the research. Correctly chosen method makes the research credible, in-depth and trustworthy academic work. Essentially, the procedure by which the researcher goes about their work of describing, explaining and predicting phenomena are called research methodology. Its aim is to give the work plan of research. It is necessary for the researcher to design a methodology for the problem chosen. The methodology of this research has been presented under the following headings:

- 3.1 Research Design
- 3.2 Population
- 3.3 Sampling Technique and Sample Size
- 3.4 Methods of Study
- 3.5 Tools of Data Collection
- 3.6 Administration of the Tool
- 3.7 Statistics Used for data analysis

3.1 Research Design

Research design is the planning, structure and strategy of investigation conceived so as to obtain answer to research questions and to control variance. It enables the researcher to answer research questions in validity and objectivity, as far as possible, accurately and economically. It is arrangement of condition for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy and right procedure.

Research designs are important because they provide road maps for how to rigorously conduct studies to best meet certain objectives. "Research design provides that glue that holds the research project together. A design is used to structure the research, to show how all the major parts of the research the sample or groups, measures treatments or programs, and methods of assignments work together to try to address the central research question": (*Trochim, 2009*). In the words of *Cresswell (2003) & Crotty (1998)* "Research design refers to the plan of action that links the philosophical assumptions, to a specific methods".

The present study has adopted a combination of methodological tools. The method with combination of different methodological tools is termed as a mixed method, as it incorporates qualitative and quantitative techniques, simultaneously at various level of research. A mixed methods research design is a procedure for collecting, analyzing, and "mixing" both quantitative and qualitative research and methods in a single study to understand a research problem.

Mixed methods research is a methodology for conducting research that involves collecting, analyzing, and integrating (or mixing) quantitative and qualitative research (and data) in a single study or a longitudinal program of inquiry. The purpose of this form of research is that both qualitative and quantitative research, in combination, provides a better understanding of a research problem or issue than either research approach alone. "Involved integrating quantitative and qualitative approaches to generating new knowledge and can involve either concurrent or sequential use of these two classes of methods to follow a line of inquiry." (*Stange K et al, 2006*).

Mixed methods research is becoming increasingly articulated, attached to research practice, and recognized as the third major research approach or research paradigm, along with qualitative research and quantitative research (*Johnson, Onwuegbuzie and Turner: 2007*). Studies that are products of the pragmatist paradigm and that combine the qualitative and quantitative approaches within different phases of the research process are mixed method studies (*Tashakkori & Teddlie, 2008*).

Mixed methods research is the systematic combination of qualitative and quantitative methods in research or evaluation. There has been a growing interest in this topic (Johnson & Onwuegbuzie, 2004). Advocates have argued that mixed methods can overcome weaknesses of a single (qualitative or quantitative) method (Greene & Caracelli, 1997; Howe, 1988; Johnson & Onwuegbuzie, 2004; Sechrest & Sidana, 1995). Greene and Caracelli (1997) provided the following major justifications for mixed methods: (a) triangulation: combining qualitative and quantitative methods to study the same phenomenon in order to gain convergence and increase validity (Denzin, 1970) (b) compensatory: using strengths of each method to overcome the weaknesses of the other to enrich the study of a phenomenon, and (c) expansion: using each method to obtain a fuller picture of a phenomenon.

Mixed method studies combine qualitative and quantitative research methods so they work in tandem to answer the key research questions in a single study (Johnson and Onwuegbuzie 2004; Yin 2006). Mixed method designs are increasingly popular in education and other applied fields (Chen 1997; Mactavish and Schleien 2004; Nastasi and Schensul 2005; Sandelowski 1996). The collection and combination of both quantitative and qualitative data in research has been influenced by several factors. Unquestionably, both

quantitative and qualitative data are increasingly available for use in studying social science research problems. Also, because all methods of data collection have limitations, the use of multiple methods can neutralize or cancel out some of the disadvantages of certain methods (e.g., the detail of qualitative data can provide insights not available through general quantitative surveys) (*Jick, 1979*). Thus, there is wide consensus that mixing different types of methods can strengthen a study (*Greene & Caracelli, 1997*). Qualitative research has become an accepted legitimate form of inquiry in the social sciences, and researchers of all methodological persuasions recognize its value in obtaining detailed contextualized information. Also, because social phenomena are so complex, different kinds of methods are needed to best understand these complexities (*Greene & Caracelli, 1997*).

Cresswell and Clark (2007) further elaborates mixed methods research as "a research design with philosophical assumptions as well as methods of inquiry. As a methodology, it involves philosophical assumptions that guide the direction of the collection and analysis of data and the mixture of qualitative and quantitative approaches in many phases in the research process. As a method it focuses on collecting, analyzing and mixing both qualitative and quantitative approaches in combination provides a better understanding of research problems than either approach alone".





Within mixed methods research the typologies have further been explained by *Johnson and Christen (2004)* as described in Fig 3.2.

A. Multi-method designs are more than one method but restricted to within one worldview. i.e., Quantitative/ Qualitative

B. Mixed methods design makes use of Quantitative And Qualitative research methods and data collection procedures. It is again two types. Viz.,

I. Mixed methods Research which occurs in the method stage of the study.

II. Mixed model Research which can occur in the several stages of the study.

Similarly Johnson and Onwuegbuzie (2004) stated mixed- model as mixing qualitative and quantitative approaches within or across the stages of research process and mixed method as the inclusion of quantitative phase and a qualitative phase in an overall research study. As *Tashakkori and Teddile* (2003) noted that they had found nearly 40 different types of mixed methods design in the literature. *Cresswell and Clark* (2007) claims that "although authors have emphasized different features and used different names there is actually more similarities than differences among this classification". Based on this theory they have proposed four major types of mixed methods design was found suitable for the purpose.

Thus, as a working definition, mixed method is an approach to inquiry in which the researcher links, in some way (e.g. merges, integrates, connects) both quantitative and qualitative data to provide a unified understanding of a research problem. Mixed method research is formally defined here as the class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study. A combination of quantitative and qualitative analysis often leads to better results especially in the field of social sciences and education.

In the present study, the researcher has adopted mixed approach as the method of the study as per the demand of the objectives. To access the status of girls education in Siraha district, the researcher has used data obtained from various secondary sources, i.e. various reports, The district Development office and District education Office reports etc. In the same way, to find out the impediments of girls education, the researcher has used opinionnaire. Similarly, the researcher has used interview to explore the impetuses to overcome the impediments of girls' smoother education and for the validation of data obtained from the opinionnaire.

Triangulation

"Triangulation' is a process of verification that increases validity by incorporating several viewpoints and methods. In the social sciences, it refers to the combination of two or more theories, data sources, methods or investigators in one study of a single phenomenon to converge on a single construct, and can be employed in both quantitative (validation) and qualitative (inquiry) studies. In the social sciences, the use of 'triangulation' can be traced back to *Campbell and Fiskel (1959)*. ."They argued that more than one method should be used in the validation process to ensure that the variance reflected that of the trait and not of the method. Thus, the convergence or agreement between two methods ". . . enhances our belief that the results are valid and not a methodological artefact" (*Bouchard, 1976: 268*). This was later developed by *Web (1966*) and elaborated by *Denzin (1970*) beyond its conventional association with research methods and designs. ."

Triangulation is broadly defined by **Denzin** (1978) as "the combination of methodologies in the study of the same phenomenon. This kind of triangulation is labeled by **Denzin** (1978) as the "between (or across) methods" type, and represents the most popular use of triangulation. Triangulation is an attempt to map out, or explain more fully, the richness and complexity of human behaviour by studying it from more than one standpoint (Cohen and Manion, 1998).

Triangulation is not aimed merely at validation but at deepening and widening one's understanding, and tends to support interdisciplinary research rather than a strongly bounded

discipline of sociology or anthropology. Most recently, the debates about the relationship between quantitative and qualitative methods as viewed by **Blaikie** (1991), particularly in evaluation research, have advocated a combination of methods. There have been mixed views on the use of 'triangulation' in research. **Olsen** (2004) views some authors' argument for 'triangulation' is just for increasing the wider and deep understanding of the study phenomenon. While **Web** (1966), **Campbell** (1966), **Smith & Kleine** (1986) and **Denzin** (1978) have argued that 'triangulation' is actually used to increase the study accuracy in this case 'triangulation' is one of the validity measures.

In a broad way triangulation is defined as the use of multiple methods mainly qualitative and quantitative methods in studying the same phenomenon (*Jick*, *1979*) for the purpose of increasing study credibility. This implies that triangulation is the combination of two or more methodological approaches, theoretical perspectives, data sources, investigators and analysis methods to study the same phenomenon. "By combining multiple observers, theories, methods, and empirical materials, researchers can hope to overcome the weakness or intrinsic biases and the problems that come from single-method, single-observer, single-theory studies. Often the purpose of triangulation in specific contexts is to obtain confirmation of findings through convergence of different perspectives. The point at which the perspectives converge is seen to represent reality." (*Jakob, Alexander*, *2001*).

Denzin (1970) distinguished four forms of 'triangulation': data 'triangulation' (retrieve data from a number of different sources to form one body of data), investigator 'triangulation' (using multiple observers instead of a single observer in the form of gathering and interpreting data), theoretical 'triangulation' (using more than theoretical positions in interpreting data) and methodological 'triangulation' (using more than one research method or data collection technique). Of the four methods, methodological 'triangulation' represents the most common meaning of the term. The type of 'triangulation' chosen depends on the purpose of a study, and more than one type of 'triangulation' can be used in the same study. As suggested by **Denzim** (1978), in the present study, the researcher has used methodological triangulation, which means using more than one research method or data collection technique.

3.2 Population

According to *Simpson and Kofka (1971)* "A universe or population may be defined as an aggregate of items possessing common trait or traits. A universe or population is the complete group of items about which knowledge is sought and each and every item has some certain specified attribute or attributes." The size of population depends on the objectives of the study. It can be large or small, finite or infinite.

Best and Kahn (2008) defines population as "A population is any group of individuals that have one or more characteristics in common that are of interest to the researcher". In the words **Reber and Reber, (2001)** of "Population refers to total number of cases about which a specific statement can be made." **Fox (1965)** defines it as "that portion of the population to which the researcher has access".

Kish (1965) stated that a population should be described in terms of (a) content, (b) units, (c) extent and (d) time. In this study as per the definition of (*Kish*, 1965) the population consists of girl students have been described as (a) Government aided secondary schools, (b)

Of grade IX, (c) Of Siraha district of Eastern Development Region in Nepal, (d) in the academic year of 2013-2014.

The study follows the five stage sampling cycle as given in Fig: 3.2 which have been described by *Fox* (1969).





In this cycle the researcher identifies the universe that is relevant for his research problem and purpose and then identifies his population, that is, the portion of the universe to which he has access. The appropriate sample size is collected by desired sample collection techniques. Those who respond to the investigator's invitation to participate in the data generation process become the 'accepted sample'. It is not necessary that all the sample that belong to the accepted group from the 'data producing sample'. It is from this data that the researcher obtains finding and conclusions. As the investigator's aim is generalization from the sample, thus the findings are used to estimate the population characteristics.

In this study, as school girl students were the target group, thus the accepted sample formed the invited sample. As there were 78 Government aided secondary schools in Siraha district, the researcher selected 10% of those school. So the researcher collected data from 8 Government aided secondary schools in Siraha district.

3.3 Sampling Technique and Sample size

Sampling is taking any portion of a population or universe as representative of that population or universe. (*Kerlinger, 1998*). Similarly, *Chaplin (2001)* defines sample as a selected part which is representation of the whole. As research work is guided by inductive thinking, the researcher proceeds from specialty to generality. The sample observation is specific situation, while the population is the general situation.

Selection of sample is the most important feature of research. A sample is the part of universe which is selected for the purpose of investigation. A sample should exhibit the characteristic of the universe; it should be 'microcosm' a word literally means 'small universe' (*Simpson & Kofka, 1971*). There is no fixed opinion about the size of sample. According to *Fisher (1950)*, large sample is to be preferred than a smaller one. Actually the sample size is usually determined by kind of the problem to investigate and the tool used for investigation.

Choosing a mixed sampling design involves choosing the sampling scheme and sample size for both the quantitative and qualitative components of a research study. We use the mixed sampling framework provided by *Onwuegbuzie and Collins (2007)*. According to this framework, mixed sampling design is classified in two major criteria: (a) the time orientation of the components and (b) the relationship between the quantitative and qualitative samples (i.e., sample relationship). Time oriented criteria refer to whether quantitative and qualitative phases occur concurrently or sequentially. When using a concurrent time orientation, data are collected for the quantitative phase and qualitative phase of the study at the same or approximately the same time period. Data from the both samples (i.e., quantitative and qualitative samples) are combined and interpreted at the study's data interpretation stage. When the researcher uses the sequential time orientation, data obtained from the sample during the first phase of the study are used to shape or structure the sample selection of the next phase of the study (the quantitative phase followed by qualitative phase or vice versa).

The sample related criteria of the quantitative and qualitative samples results in four major types: identical, parallel, nested and multilevel. An identical sample relation means that the same people participate in both the quantitative and qualitative phases of the investigation. A parallel indicates that the samples for the quantitative and qualitative components of the research are different but are drawn from the same population. A nested relation means that the participants selected for one phase of the study represent a subset of those participants who were selected for the other phase of the study. Finally the multilevel relation involves the use of quantitative and qualitative samples that are obtained from different levels of the population under study.

The two criteria just discussed- time orientation (which has two types) and sample relation (which has four types) - results in eight mixed sampling design: (1) identical concurrent, (2) identical sequential, (3) Parallel concurrent, (4) Parallel sequential, (5) nested concurrent, (6) nested sequential, (7) multilevel concurrent and (8) multilevel sequential.

The sampling technique used one of 'Multilevel mixed sampling'. *Kemper, Stringfield and Teddile (2003),* states that "Multilevel mixed sampling occurs when probability and purposive sampling techniques are used on different levels of the study (e.g., student, class, school, district)". They further explain that "Sampling strategies conducted in educational setting are often "naturally" mixed because the level of schooling are "deeply

nested" (e.g., students within classroom within grade within school within district within country). It is likely that studies, conducted within such nested setting will call for probability samples for at least one level and purposive samples for at least one level.

In the present study, 'multistage sampling' as suggested by *Keeves (1988)* was used. The sample altogether consisted of 5 levels. In the first and second level districts and the type of school were selected randomely. The district selected was Siraha district of Nepal. In the second step the researcher selected Government aided secondary schools of Siraha district. In the third step the 8 schools were selected randomly from the list of secondary school provided by District Education Office, Siraha. Since, there were 75 secondary schools in Siraha district, the researcher took 10% schools from total number of school. From these sample of school, class 9 was selected purposively by the researcher as many studies reflected that most of the girls dropout at this level of schooling. At last all the girls students of the selected schools, studying in grade nine were taken as a sample for the study.

In this present study after using multistage sampling as suggested by *Keeves (1998)*, the researcher has used nested concurrent mixed sampling design (*Onwuegbuzie and Collins (2007)*, which means that it involves quantitative and qualitative data being collected approximately at the same time (i.e., concurrently) but the qualitative samples being the subset of the quantitative samples or vice versa. First the researcher administered the oppinionnaire on the selected 401 samples of eight government aided schools and later interviewed five students from each eight selected schools. The description of selected schools and students is presented in the following table.

S.N.	Name of schools					
		of				
		students				
1	Shree Mohan Higher Secondary School, Ramnagar, Mirchaiya, Siraha	61				
2	Shree Janta Banbali Higher Secondary School, Barchava, Narha,	66				
	Siraha					
3	Shree Laxman Mandal Janta Higher Secondary School, Baniniya,					
	Arnama, Siraha					
4	Shree Secondary School, Bishnupur, Dadaul, Siraha					
5	Shree Ram Dulari Higher Secondary School, Kalyanpur, Siraha 47					
6	Shree Chandra Higher Secondary School, Siraha61					
7	Shree Mahendra Higher Secondary School, Chainpur, Siraha25					
8	Nepal Rastriya Fulkumari Mahato Higher Secondary School,	48				
	Bandipur,Siraha					
Total	Number of school: 8	401				

Table No. 3.1: List	of schools selected a	and number of students
---------------------	-----------------------	------------------------

3.4 Method of Study

Research methods are the means, the instruments or the tools a particular investigator chooses to accumulate the information required to answer his research question. According to *Wisker, 2008, Methods are the vehicles and processes used to gather data.* Similarly *Cresswell,2003; Van Mahen, 1990* define methods as techniques of data collection and analysis, such as quantitative standardized instrument or a qualitative theme analysis of text data, which are more specific in nature. In the present study method includes tools used for

data collection and statistics used for data analysis, which is clearly represented in the chart mentioned below.





3.4.1Tools used for Data Collection

A suitable research tool contributes to the validity of the findings of any research study. The success of any research study depends largely on the nature and appropriateness of tools used. Data collection can be derived from a number of methods, which include interviews, focus groups, surveys, telephone interviews field notes, taped social interaction or questionnaires (*Heaton, 2004*). Data collection is a complicated and hard task. By and large it is also very difficult to say which the best method of data collection is. Therefore which data collection method to use depends upon the research goal and the advantages and disadvantages of each method. It also depend upon various factors as the relevance to the objective of the study, availability of the test materials or tools, reliability and validity of tools, cultural and social aspects and time needed for the tools. Therefore it is necessary to adopt a systematic procedure to collect essential data.

For collecting new and unknown data required for the study of any problem, various devices are made use of and the selection of such devices is of vital importance for any successful research. Different and appropriate tools are to be used for collecting various kinds of information for assorted purpose. Thus, tools are set of stimulus constructed to garner

desired response from the subjects. For the present study the researcher used following tool as per the demand of objectives.

1. Opinionnaire to Study Impediments of Education of Madheshi Girls in Nepal (self constructed)

2. Interview schedule to explore impetuses and for legitimation of data obtained from opinionnaire

3.4.1.1 Opinionnaire

Opinion is what a person says on certain aspects of the issue under considerations. It is an outward expression of an attitude held by an individual. Attitudes of an individual can be inferred or estimated from his statements of opinions. "Opinion polling or opinion gauging represents a single question approach. The answers are usually in the form of 'yes' or 'no'. An undecided category is often included. Sometimes large number of response alternatives if provided" (*Anastusi, 1998*).

An opinionnaire is defined as a special form of inquiry. It is used by the researcher to collect the opinions of a sample of population on certain facts or factors the problem under investigation. These opinions on different facts of the problem under study are further quantified, analysed and interpreted. "An information form that tries to measure the attitude or belief of an individual is known as opinionnaire" (Best and Kahn, 1997). Even behavior itself cannot always be a true indication of attitude. Even though there is no clear method of describing and measuring attitude, the description and measurement of opinion, in majority of instances, may be closely related to people's feelings or attitudes. Similarly Freeman, 1965, defined opinionnaire as the inquiry that attempts to assess the attitude or belief of an individual. In the present study, after a thorough review of literature four dimensions of impediments namely socio-cultural impediment, economical impediment, psychological impediment and institutional impediment were selected. To study and analyze the opinion of Madheshi girl students regarding the impediments of their educational development, an opinionnaire was prepared on the basis of above mentioned dimensions. The tool is in two parts. The first part i.e. part A, which requires personal information about the respondents. In the second part i.e. part B, the statements related with four dimensions are clubbed together.

The first Draft

As a preliminary step for making the opinionnaire, a list of 72 statements on the various dimensions of impediments was prepared. To check the suitability of the items incorporated into the first draft of the tool being developed it was given to 15 experts. They were requested to give their opinion pertaining to clarity of items, appropriateness of language of the items, ambiguity of items if any. (The list of experts selected for the study is given in Appendix V). Based on their suggestions, some items were modified and some were deleted. They were also consulted for the clear understanding of the instructions typed in the tool. Based on the suggestions given by experts 54 items were further put to the tryout.

Preparation of the Instruction for the Administration:

The second draft in fact included a personal data sheet seeking the information about age, religion, type of family, number of members in family, fathers education, mother's education, father's occupation, mother's occupation, distance of school from home, economic status, number of teachers in school, , number of male teachers in school and number of female teachers in school. The instruction included brief introduction about the purpose of

opinionnaire. It also included the mode of answering as well as the assurance for non-misuse and maintaining privacy about the answers of the respondents.

Pre Try-Out

This was administered to a sample of 150 Madheshi girls studying in class 9 of selected school to find out----

- Ambiguity of language.
- Instructions are followed clearly.
- > Attractiveness and appropriateness of some items.

It was emphasized that no items should be omitted and there was nothing right or wrong about these items. It was assured that their responses would be kept confidential. The respondents were requested to answer each item in terms of their agreement/disagreement by putting a tick mark ($\sqrt{}$) in any one of the five columns, strongly agree, agree, neutral, disagree and strongly disagree. The answer sheets were then collected and scoring was done.

Scoring of the Statements

Since the tool is in two parts so the scoring is also in two parts. For the first part that is the instruction and personal data sheet (Part-A) to be filled by the respondents, the scoring pattern is as follows:

- A- Age:
- B- Religion: (Hindu-1, Muslim-2)
- C- Numbers of member in family:
- D- Type of family: (Joint-1, Single-2)
- E- Birth order: (Eldest-1, Middle-2, Youngest-3)
- F- Education of father: (Graduate-4, Intermeddiate-3, High school-2, Illiterate-4)
- G- Education of mother: (Graduate-4, Intermeddiate-3, High school-2, Illiterate-4)
- H- Father's occupation: (Buisness-1, Service-2, Others-3, Foreign Employment-4)
- I- Mother's occupation: (Buisness-1, Service-2, Housewife-3, others -4)
- J- Distance of school from home: (More than 1 km- 1, Less than 1 km- 2)
- K- Economic status: (Below poverty line-1, above poverty line-3)
- L- Total number of teacher:
- M- Total number of male teacher
- N- Total number of female teacher

The second part (Part-B) of the opinionnaire consists of their answers on Likert rating scale . The Likert technique assigns a scale value to each of the five responses to yield a total score for each respondent. There are two type of items in the opinionnaire- Positive and Negative.

For positive or favourable statements to be impediment, the following scoring pattern was followed:

Statements	Score			
Strongly Agree	5			
Agree	4			
Neutral,	3			
Disagree	2			
Strongly disagree	1			

Table 3.2: Scoring for positive statements

For negative or unfavourable statements to be impediment, the following scoring pattern was followed:

Table 5.5. Beoring for negative statements			
Statements	Score		
Strongly Agree	1		
Agree	2		
Neutral,	3		
Disagree	4		
Strongly disagree	5		

 Table 3.3: Scoring for negative statements

The positive items to be impediments are-----2, 4, 6, 7, 8, 9, 10, 11, 13, 14, 15, 17, 18, 19, 21, 22, 23, 26, 27, 28, 31, 32, 35, 36, 38, 40, 42, 43, 44, 45, 46, 48, 49, 52, 53, and 54. The negative items which are not impediments are----1, 3, 5, 12, 16, 20, 24, 25, 28, 29, 30, 33, 34, 37, 39, 41, 47, 50, and 51.

Item Analysis

Item analysis was done to select suitable items for the final opinionnaire, The total score obtained for each respondent was calculated and the response sheets were arranged in the order of magnitude of the total scores. Then the highest 27 percent and the lowest 27 percent were taken out for analysis since 27 percent provides the best compromise between two desirable and inconsistent aims - (i) to make extreme groups as large as possible and (ii) to make extreme groups as different as possible.

All 150 response sheets obtained, from pre-test on Class 9 Madheshi girl students were selected for item analysis. The top 27 percent (the top 41) and the bottom 27 percent (the bottom 41) response sheets from each section were used as extreme groups for item analysis. The scores obtained for each item in these extreme groups were used for calculating the discriminating power of each item. The discriminating power was obtained by calculating the critical ratio 't' using the formula (Edwards, 1957, p.153).

$$t = \frac{\overline{X}_{H} - \overline{X}_{L}}{\left(\frac{S_{H}^{2}}{N_{H}}\right) + \left(\frac{S_{L}^{2}}{N_{L}}\right)}$$

Where,

 \overline{X}_{H} = Mean of higher group on the given statement.

 \overline{X}_{L} = Mean of lower group on the same statement.

 S_{H}^{2} =Variance of the distribution of the response of the higher group to the statement.

 S_L^2 =Variance of the distribution of the response of the lower group to the statement.

 N_{H} = Number of the subjects in higher group.

 N_L = Number of the subjects in lower group.

The Mean, SD and t-value for every item was calculated on the basis of these two groups. In this way t-value of 33 items were found significant at 0.01 level of confidence, out of 54 items. Thus only 33 items were selected for final draft of scale and only one item hence removed.

SN	Lowe	er group	Higher Group		t-test for Equality of Means			
Item s	Mean	Std. Deviatio n	Mean	Std. Deviation	Т	Df	Sig. (2- tailed)	Selected or rejected
1	4	0	3.9268	0.81824	0.573	80	0.569	Rejected
2	2.439	0.83812	1.9756	0.4176	3.169	80	0.002	Selected
3	1.8049	0.40122	2.0244	1.10652	-1.194	80	0.236	Rejected
4	3.8537	0.5273	2.6829	0.96018	6.843	80	0	Selected
5	3.7073	1.18836	2.6829	1.19246	3.896	80	0	Selected
6	2.3902	0.80244	2.2195	0.61287	1.083	80	0.282	Rejected
7	2.0488	0.31235	2.0732	0.34571	-0.335	80	0.738	Rejected
8	3.9512	0.31235	4.2195	1.17286	-1.415	80	0.161	Rejected
9	3.0732	0.98464	2.4146	1.09489	2.864	80	0.005	Selected
10	3.4878	0.63726	3.0244	1.17234	2.224	80	0.029	Selected
11	3.2439	0.94288	1.8293	0.38095	8.907	80	0	Selected
12	4.1463	0.35784	2.8049	1.34572	6.168	80	0	Selected
13	2.439	0.83812	2.439	1.09656	0	80	1	Rejected
14	2.9024	1.11366	3.439	1.22574	-2.075	80	0.041	Selected
15	2.6585	1.06324	1.7561	0.43477	5.03	80	0	Selected
16	3.8537	0.85326	3.1707	0.94611	3.432	80	0.001	Selected
17	2.8293	0.99756	2.439	0.77617	1.977	80	0.051	Rejected
18	3.1951	0.95445	2.2439	0.79939	4.892	80	0	Selected
19	3.3171	1.23367	2.1463	0.85326	4.998	80	0	Selected
20	2.7317	0.9753	2.5366	0.89715	0.943	80	0.349	Rejected
21	2.878	1.00487	2.1707	0.54325	3.965	80	0	Selected
22	2.3659	0.48765	2.2927	0.71568	0.541	80	0.59	Rejected
23	3.2683	0.9753	2.1951	0.90054	5.176	80	0	Selected
24	2.9756	1.01212	3.0976	1.11366	-0.519	80	0.605	Rejected
25	2.2927	0.71568	2.3659	0.91532	-0.403	80	0.688	Rejected
26	3.9268	1.12673	2.7561	1.09042	4.781	80	0	Selected
27	3.6098	1.0459	3.7805	0.88069	-0.8	80	0.426	Rejected
28	2.9512	1.11694	2.2195	0.72499	3.518	80	0.001	Selected
29	3.3415	1.06324	2.439	1.20517	3.595	80	0.001	Selected
30	3.6098	1.3015	2.9268	1.03417	2.631	80	0.01	Selected
31	4.4878	0.50606	4.4146	1.07181	0.395	80	0.694	Rejected
32	3.561	1.07352	2.2927	0.71568	6.294	80	0	Selected
33	2.9756	1.38722	2.6585	1.19603	1.108	80	0.271	Rejected
34	3.4146	1.13964	2.6098	1.0459	3.332	80	0.001	Selected
35	3.1951	1.28879	2	0	5.938	80	0	Selected
36	3.9268	0.60788	2.3171	0.87861	9.648	80	0	Selected
37	4.1463	1.01393	3.1463	1.03829	4.412	80	0	Selected

 Table 3.4:'t' value of items for Opinionnaire (tested at 0.01 level of significance)

38	4.0488	0.97343	3.6585	1.81121	1.215	80	0.228	Rejected
39	2.3659	1.13481	2.561	1.02588	-0.817	80	0.417	Rejected
40	2.9756	1.01212	2.122	0.67805	4.487	80	0	Selected
41	3.0244	1.01212	3.0976	1.11366	-0.311	80	0.756	Rejected
42	3.4146	0.92129	3.3415	1.06324	0.333	80	0.74	Rejected
43	3.2683	0.9753	2.7561	0.91598	2.451	80	0.016	Selected
44	2.5854	0.92129	2.0976	0.43617	3.064	80	0.003	Selected
45	1.9268	0.26365	2.439	0.83812	-3.733	80	0	Selected
46	2.9512	1.11694	2.1463	0.5273	4.173	80	0	Selected
47	3.4878	1.20669	2.1951	0.71483	5.902	80	0	Selected
48	2.7561	1.09042	2.6585	0.91131	0.44	80	0.661	Rejected
49	3.2439	0.91598	2.561	1.02588	3.18	80	0.002	Selected
50	2.9512	0.80471	2.6585	1.01513	1.447	80	0.152	Rejected
51	3.6829	0.72246	2.5854	0.99939	5.699	80	0	Selected
52	4.2683	0.44857	3.6829	0.87861	3.799	80	0	Selected
53	3.7805	0.41906	3.6585	0.7619	0.898	80	0.372	Rejected
54	4.0732	0.26365	3.7561	0.85967	2.258	80	0.027	Selected

Table 3.4 shows that items no.2, 4, 5, 9, 10, 11, 12, 14, 15, 16, 18, 19, 21, 23, 26, 28, 29, 30, 32, 34, 35, 36, 37, 40, 43, 44, 45, 46, 47, 49, 51, 52 & 54 were accepted due to high 't' value and item no. 1, 3, 6, 7, 8, 13, 17, 20, 22, 24, 25, 27, 31, 33, 38, 39, 41, 42, 48, 50, & 53 were rejected due to low 't' value. Only 33 items were included in final form of scale.

Selection of Items and Preparation of the Final Draft

For the preparation of the final opinionnaire, 33 items with 't' value equal to or greater than 1.75 were selected as the value of 't' is a measure of the extent to which a given statement differentiates between the high and low groups. Six statements having 't' values lower than 1.74 and five other statements having comparatively lower't' values were rejected from the draft form. The remaining 33 statements were retained in the final form. "As a crude and approximate rule of thumb, we may regard any 't' value equal to or greater than 1.75 as indicating that the average response of the high and low groups to a statement differs significantly, provided we have 25 or more subjects in the high group and also in the low group" (Edwards, 1971).

The classification of the statements in the final tool is given in the following table:

S. N.	Dimensions	No. of statements
1	Socio-cultural Impediments	3, 7, 10, 12, 14, 16, 19, 21, 22, 24, 25, 26, 32,
		33
2	Economical Impediments	1, 4, 13
3	Institutional Impediments	5, 8, 11, 15, 17, 20, 23, 27, 29
4	Psychological Impediments	2, 6, 9, 18, 28, 30, 31

Table 3.5: Classification of Statements in the Opinionnaire

In each category, an equal number of positive and negative statements as far as possible were arranged at random. The statements were arranged on a five point scale with the responses, strongly agree, agree, neutral, disagree and strongly disagree.

The draft form of the Opinionnaire (English version), its final form and the Nepali version of the Opinionnaire (final form) is given in Appendix-I.

Reliability

Reliability of a tool is generally defined as the ratio of true variance and to obtained variance of scores. The error variance component of scores generated by a perfectly reliable tool is zero and there is no error of measurement. Hence reliability is one of the most important characteristics of a tool which denotes how accurately the tool measures whatever it measures. The internal consistency was established by using Cronbach's alpha and the reliability coefficient for overall scale is 0.775. The reliability coefficient for overall opinionnaire is 0.775 and for whole data is 0.611, which is significantly high. It is inferred that the tool is reliable for the population.

Validity

"Validity is that quality of the tools used or procedure that enables to measure what it is supposed to measure" (*Best & Kahn, 1999*). Validity of a tool lies mainly in the procedure adopted for constructing it. The validity of tool is generally defined as its capacity to measure what it purports to measure. Although validity coefficient is liable to be deceptive and should not be accepted yet they prove to be useful indices of validity of heterogeneity of sample and other factors are kept in view in obtaining them. The content validity of scale was found out on the basis of 15 expert's judgements of psychology, education and women's study. For this, experts were given the questionnaire and they were requested to examine whether the content of items are serving the purpose or not. After the opinions of the experts, the tool was modified again according to the suggestion provided and finally the content validity of scale was established.

According to *Garret (1981)* the index of reliability is sometime taken as a measure of intrinsic validity. The index of reliability to measure the dependability of the test scores by showing how well obtained scores agree with their theoretically true values. The index of reliability of this scale is 0.775, which is very high. It is thus reasonable to assume that the opinionnaire to study impediments of girls' education yields data that are scientifically as accurate as is possible and the scale is acceptably valid.

3.4.1.2 Interview

Interviewing is a way to collect data as well as to gain knowledge from individuals. *Kavle (1996)* regarded interview as"...... An interchange of view between two or more people on a topic of mutual interest, sees the centrality of human interaction for knowledge production, and emphasizes the social situations of research data". The interview is a flexible tool for data collection, enabling multi-sensory channels to be used: verbal, non-verbal, spoken and heard. Semi-structured interviews are non-standardized and are frequently used in qualitative analysis. The interviewer does not do the research to test a specific hypothesis (*David & Sutton, 2004*). The researcher has a list of key themes, issues and questions to be covered. In this type of interview the order of the questions can be changed depending on the direction of the interview. An interview guide can also used, but additional questions can be asked.

Corbetta (2003) explains semi-structured interviews as follows: The order in which the various topics are dealt with and the wording of the questions are left to the interviewer's

discretion. Within each topic, the interviewer is free to conduct the conversation as he thinks fit, to ask the questions he deems appropriate in the words he considers best, to give explanation and ask for clarification if the answer is not clear, to prompt the respondent to elucidate further if necessary, and to establish his own style of conversation.

Additional questions can be asked and some may be questions that have not be anticipated in the beginning of the interview. Note taking or tape recording documents the interview. This type of interview gives the researcher the opportunities to probe for views and opinions of the interviewee. Probing is a way for the interview to explore new paths which are not initially considered (*Gray, 2004*).

The interview schedule, in the present study was used as an instrument to explore the impetuses which will help to reduce those impediments which are hindering the pace of educational development of Madheshi girls in Siraha district, Nepal. It was also used for establishing the trustworthiness of data collected using opinionnaire, i.e. triangulation. It was administered as a part of member checking in which summaries of the finding were taken back to the key participants in the study and it was sought whether the findings were accurate reflection of their experiences. This evaluation was undertaken to find whether or not the research findings represent a credible conceptual interpretation of the data drawn from the participants' original data. The schedule contained open ended questions.

3.5 Administration of the tool and data collection

Both the tools were personally administered on the whole sample and instructions were also orally presented to all the ninth graders girl students of the selected secondary school at the time of handing over the tool and data was collected personally. A master chart has been prepared and attached as an Appendix- VIII. After administering the questionnaire in each school the researcher interviewed five girl students who were more vocal and active next day. They were selected on the basis of teachers' advice.

3.6 Statistics Used for data analysis

As per the objective of the study, there were two types of data which were collected using two separate tools and techniques. In order to arrive at meaningful inferences related to objectives of the present study, the descriptive statistics Mean, Standard Deviation, pie-chart, bar-chart, percentage distribution and chi-square have been used. SPSS 17.0 version has been used for computing all the statistical analysis.