# Methods? Data? Sources? Utilizing a Research Schedule to Scaffold Student Learning

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*Many university students, from a range of disciplines, are required to undertake introductory research method units as part of their undergraduate or post-graduate qualification. These units provide the learner with skill development to read and make use of research as it relates to their discipline. However, research is a complex area making the teaching of research to first time consumers of research, a challenge. This article describes the use of a Journal Article Research Analysis (JARA) Schedule with 150 students studying in a research method subject as part of graduate entry initial teacher education program. The results of the study indicate that the schedule proved to be a great resource in assisting students understand the main domains of research. This is an approach and a resource that academics teaching research method classes could adopt to assist student learning.*

## Introduction

In many countries, including Australia, the training and education sectors have a national framework outlining levels of post-school attainment associated with specific qualification awards (Australian Qualifications Framework, 2013). In this framework students undertaking advanced programs must be able to demonstrate research knowledge and skill, and the application of these to a range of audiences (Australian Qualifications Framework, 2013). However, many students struggle to understand the configuration of research, especially students studying in professional degree programs, grappling with the content, assessment tasks and the abstract thinking required to understand the way research is conceptualised and undertaken (Earley, 2014; Jinks & Ning, 2010; Lewthwaite & Nind, 2016). The difficulties associated with teaching

research methodology has been described in previous studies as 'the most challenging in university teaching' (Howard & Brady, 2015). It is problematic that students have a general distaste towards studying research because their capacity to distinguish between the validity of research findings and unsound declarations is a desired and required outcome for higher level learning and educational attainment within the Australian Qualifications Framework (AQF).

In this article, the authors are reporting on the use of a Journal Article Research Analysis (JARA) Schedule in the teaching of an introductory research methods unit to post graduate initial teacher education students. In particular, this project sought to answer the following questions.

- How the JARA Schedule assisted student understandings of the various components of education research?
- Based on the research components identified in the JARA Schedule which components did students struggle to identify correctly.
- How did the use of the JARA Schedule inform the staff in regard to the teaching of research methodology to those studying research for the first time.

## Teaching Research Concepts

The field of research is multifaceted, placing complexities on the most appropriate teaching approach. (Wagner et al., 2011; Earley, 2014; Howard & Brady, 2015). Considerations such as what should be the starting point and introduction? What key components need to be taught; what content should be emphasised and how; what key topics are considered important and relevant; what content may need to be omitted or less emphasised? (Dunn & Saville, 2015; Gallenta, 2015). The starting point is important, as this shapes the learning outcomes of the unit, the content covered in the unit, the nature of the assessment tasks, the relevance and application of research skills and knowledge, as well as the overall learning experience for

students. In professional qualifications there is limited time available dedicated to the teaching of research, therefore decisions have to be made by the instructor as to how the content in an introductory unit on education research can be focused and configured.

For those studying professional degrees such as teaching, an introductory research method unit could be the only time they will study the area of educational research. A pre-service teacher provided with a sound foundation in research methods is more likely to be a productive user of education research as a teaching practitioner (Knipe & Bottrell, 2015). Therefore, a useful starting point is to focus on the types of research methodology that is prevalent in the literature. This notion is based on the assumption that students are more likely to come across examples of this type of research in the journal articles they read. As students are more familiar with the methodology used in the research that they encounter, then confidence should increase Knipe & Bottrell, 2013).

The lack of clarity in published research regarding methodology and research design is also a concern for those teaching students new to research (Levine, 2006; Lingard, 2013; Yates, 2005). The use of terms, such as "qualitative research" and "quantitative research," and the term "mixed method research," that largely refers to the use of both textual data and numerical data in a research study, can cause added confusion to those learning about research for first time. When there is not a shared understanding of the different types of components of research such as data source, data gathering, methodology and data analysis, barriers to learning can arise adding to student frustrations (Oancea, 2005; Wagner et al., 2011).

In this paper, the use and development of research classification instruments from various disciplines is briefly discussed, in light of previously reported efforts to design classification devices to code the reporting of research. The JARA Schedule used in this study was initially designed and tested as an instrument to analyze research published in journal articles, the results of which have been

published elsewhere (Knipe & Bottrell, 2015). During the initial development of the JARA, one of researchers used the schedule in the teaching of an introductory research methodology class with university students studying in a Master of Teaching program. The researcher elected to use the schedule in this unit as a way of 'testing and refining' the format of the instrument but also as a way to promote student's critical engagement with research design and structure. The use of the JARA Schedule as a teaching instrument was not initially considered, but after the use of the schedule in the pilot the JARA designers decided to undertake a follow on project, which is the subject of this article. The Coding Key and Scoring Sheet for the JARA Schedule used in this project are attached as an appendix at the end of the article.

## Research Classification Instruments

In the teaching of research, books are often used as a valuable source of instruction especially in explaining the specific components of research, such as how to undertake research and the type and nature of research. Books tend to be organised by chapters that address the various aspects of research rather than by methodological classifications. A review of categories used in books on research, show that some books are structured according to particular designated research methodologies, such as descriptive, case study, historical and experimental, including extensive description and detailed features on each research method (Best & Kahn, 2006; Mertler & Charles, 2011). In other books, research methodologies, approaches to data gathering and analysis are addressed separately (Babbie, 2007; Graverholz & Donley, 2012; Sikes & Opie, 2004). Concepts such as 'research paradigms' are often dealt with as a category separate from research methods (Harreveld et al., 2016; Morris, 2006).

The development of an instrument used to classify studies into various research categories and components, such as

methodology, data source, data analysis, type of research topics and themes has been undertaken in several disciplines. This includes examples from the Social Sciences (Cooper, 1984), Education (Knipe & Bottrell, 2015), Information & Communication Technology (Sang Min Ko., *et al*., 2013), Sports Science (Williams & Kendall, 2007), Marketing (Ensign, 2006) and Business Studies (Gammelgaard, 2003). There is however, less reporting on the use of these instruments as a teaching device.

## Method and Participants

There were 150 participants involved in this project drawn from a purposive sample of student teachers undertaking a course work unit in introductory research methods as part of a post graduate Masters of Teaching program at an Australian university. The presiding university endorsed ethics approval to conduct this study. One of the authors was involved in teaching the pre-service teachers and therefore the other authors sought ethics approval and undertook the data analysis to avoid any potential conflict or bias. The research received ethics approval in February 2016.

At the start of the unit students self-selected an area of interest from a number of research-focused topics. Academic staff identified topic areas based on staff expertise and priority areas for teachers. The topic areas were Literacy, Numeracy, Science Technology Engineering and Mathematics (STEM), New Pedagogies, 21st Century Learning, and Contemporary Learning Contexts (CLC). The JARA Schedule was used during the initial stages of the subject to assist student's understandings of the design components of research. Anecdotal feedback to the subject coordinator indicated that the students found this approach useful as it assisted them in understanding the various aspects of education research.

From the 150 students in the class, 33 students selected literacy (22%), 6 students selected numeracy (4%), 22 students selected STEM (14.6%), 13 students selected new pedagogies (8.6%),

27 students selected 21st Century Leaning (18%) and 22 students selected contemporary learning centres (14.6%). In total 123 (82%) students participated in the study and 27 (18%) students did not submit the completed task for the project. A display of the number of students in each of the research categories is presented in table 1.

**Table 1: Number of Students Allocated to Journal Articles**

| Article Themes | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Literacy | Numeracy | STEM | New Pedagogies | 21st Century | Contemporary Learning Contexts | **TOTAL** |
| Students allocated | 33 | 6 | 22 | 13 | 27 | 22 | 123 |
| % | 22% | 4% | 14.6% | 8.6% | 18% | 14.6% | 100% |
| JARA Schedule not submitted | | | | | | | 27 |
| Total number of students | | | | | | | 150 |

## Selection of Articles

Journal articles are a common source of published education research that students new to education research are likely to read. Therefore, in the teaching of this subject all students were provided with a range of research articles as introductory reading material. All students had one common article that was an introduction to research and then additional articles were provided specific to each of the topic areas; Literacy, Numeracy, STEM, New Pedagogies, 21st Century Learning, and CLC. Students in the Literacy theme had five additional articles provided to the group due to the diverse range and scope of student research interests, however students were only required to select three of the articles to focus on for the analysis. The numeracy group were provided with three articles, as were the STEM and 21st Century, and CLC groups. The New Pedagogies group were provided with two articles.

All articles selected were to be an account of original,

empirical research, however, when the researchers reviewed the student's responses to the articles based on using the JARA schedule, a large number of incorrect responses regarding three specific articles were identified. Two articles were from the CLC theme and one article was from the Literacy theme. Scrutiny of these articles by the researchers revealed that they were not research articles. The literacy article was an annotated bibliography and the two Contemporary Learning Contexts articles were opinion commentaries. When the subject coordinator realised that these articles were not a report on research they were removed from the analysis but were still used as part of the teaching of the subject.

The following sections describes an analysis of the student responses to each category in the JARA Schedule based on the six research areas (Literacy, numeracy, STEM, New Pedagogies, 21st Century, and CLC). The response to each category from the JARA Schedule is explained separately due to the number of categories being reported.

## Response to Categories in the JARA Schedule

*Data Source Category*

The first research category completed in the JARA Schedule was Data Source, a category indicating from whom or from where the researchers gathered data. In terms of education research Data Source as a designated category included information from school students, teachers including trainee teachers, school administrators (principals, deputy principals), parents, community, curriculum, policy, existing numerical data (system data, records), and data from intervention studies, plus any combinations of these sources of data. The overall percentage of high correct response rates indicates that students were able to locate the data source in the articles. Two articles, one from literacy and one from numeracy, had the students in that group identify the correct data source (100%). Two articles, one from numeracy and one from STEM group had 91% and 94%

respectively, identify correct responses from students.

The remaining four articles had correct response rates ranging from 61% to 87% of students identifying the correct data source providing the lecturer with the opportunity to review the data sources outlined in the articles and to correct any misunderstandings that the students may have had. This result is indicated in table 2.

**Table 2: Responses to Data Source in each article theme**

| Themes | Articles | *Total Responses | Correct Responses N % | |
|---|---|---|---|---|
| Literacy | **Article 1** | 24 | 19 | 79% |
| | **Article 2** | 10 | 7 | 70% |
| | **Article 3** | 21 | 21 | 100% |
| | **Article 4** | 49 | 36 | 73% |
| | | | | |
| Numeracy | **Article 1** | 11 | 10 | 91% |
| | **Article 2** | 19 | 19 | 100% |
| | **Article 3** | 13 | 9 | 69% |
| | | | | |
| STEM | **Article 1** | 17 | 16 | 94% |
| | **Article 2** | 31 | 20 | 65% |
| | **Article 3** | 39 | 34 | 87% |
| | | | | |
| New Pedagogies | **Article 1** | 18 | 11 | 61% |
| | **Article 2** | 19 | 14 | 74% |
| | | | | |
| 21st Century | **Article 1** | 33 | 27 | 82% |
| | **Article 2** | 24 | 17 | 71% |
| | **Article 3** | 22 | 17 | 70% |
| | | | | |
| CLC | **Article 1** | 21 | 16 | 76% |

***More than one category can have a number of responses**

*Data Gathering, Data Analysis and Research Method Categories*

The student response to the categories of Data Gathering, Data Analysis and Research Method from the JARA Schedule are reported together in the following section with a brief introductory explanation to each of these categories.

The Data Gathering category is defined as the process by which the data were collected. Six common forms for Data Gathering Methods were identified in the JARA Schedule as follows: data gathered by observation, survey (such as online, pen and paper), interview (such as face-to-face, telephone, focus group), document analysis (this includes existing audio-video or electronic material), existing data in numerical form, and data from intervention studies such as quasi-experimental research designs.

The next category completed by students in the JARA Schedule was Data Analysis, defined as the techniques and methods used to analyze the data collected. This included categories for the different methods of analysis of verbal data, and included software programs, analysis of numerical data such as means standard deviations and statistical tests, as well as statistical tests and methods of analysing intervention data.

The last category in the JARA schedule completed by the students was Research Methods. This category defined the different approaches used to undertake research. Education research encompasses a range of different methodological approaches to research including naturalistic, interpretative, hypothesis-generating models as well as hypothesis-testing models, all of which contribute to challenges in determining categories of research. The research methods listed in the JARA Schedule were identified as basic research methods used in educational research.

The categories, Data Gathering, Data Analysis and Research Methods were analysed for each of the focus areas and the

results reported on for each research category and all articles in the areas related to teaching.

Analysis of results indicated that overall students were fairly accurate at identifying the correct methods for data gathering and for data analysis. These results ranged from a correct response rate, from as high as 100% for articles in both Literacy and Numeracy themes, to as low as 68% in the New Pedagogy and Contemporary Learning Contexts themes for data gathering, and as low as 56% for data analysis. For most of the articles, however, the correct response rate for data gathering was about 80-90% and for data analysis was between 70-90%. This provided an opportunity for the subject coordinator to work with students to identify misunderstanding, which assisted the students with their learning in regard to these components of research.

Taking out the issues with the selection of appropriate articles in the New Pedagogy and Contemporary Learning Contexts themes, the overall correct response rates for data gathering and data analysis suggests that identifying these processes and strategies in research articles is a straightforward process which students were able to demonstrate they understood. This also suggests that that research articles provided clear and explicit descriptions of data gathering and analysis processes, which novice research students were able to explicate from the articles.

Conversely, the research methods category had a very low correct response rates, with the highest correct response rate being 63% for a Numeracy article, and a lowest correct response rate of 22% for one of the STEM and Numeracy articles. Overall, 12 out of 16 articles, had less than 50% of students able to correctly identify the method used in the research being reported. This presents an interesting finding and suggests that students have difficulty understanding research methodology, and particularly in transferring a general understanding of research methods to the complex and often very discipline specific terminologies and nuances of

methodology identified by various approaches to educational research. The results are displayed in table 3.

**Table 3: Responses to Data Gathering and Analysis and Research Methods**

| Article | Data Gathering | | | Data Analysis | | | Research Method | | |
|---|---|---|---|---|---|---|---|---|---|
| Literacy | **Total Responses** | **Correct n** | **%** | **Total Responses** | **Correct n** | **%** | **Total Responses** | **Correct n** | **%** |
| 1 | 32 | 22 | 69% | 17 | 12 | 71% | 31 | 9 | 29% |
| 2 | 13 | 13 | 100% | 6 | 6 | 100% | 6 | 2 | 33% |
| 3 | 30 | 28 | 93% | 17 | 16 | 94% | 26 | 13 | 50% |
| 4 | 27 | 22 | 81% | 25 | 14 | 56% | 32 | 8 | 25% |
| Numeracy | | **Correct n** | **%** | | **Correct n** | **%** | | **Correct n** | **%** |
| 1 | 11 | 10 | 91% | 6 | 6 | 100% | 12 | 4 | 33% |
| 2 | 19 | 19 | 100% | 6 | 6 | 100% | 9 | 2 | 22% |
| 3 | 13 | 9 | 69% | 10 | 9 | 90% | 8 | 5 | 63% |
| STEM | | **Correct n** | **%** | | **Correct n** | **%** | | **Correct n** | **%** |
| 1 | 18 | 16 | 88% | 27 | 26 | 96% | 22 | 6 | 27% |
| 2 | 38 | 30 | 79% | 27 | 26 | 96% | 24 | 6 | 22% |
| 3 | 35 | 33 | 94% | 28 | 24 | 86% | 26 | 10 | 38% |
| New Pedagogy | | **Correct n** | **%** | | **Correct n** | **%** | | **Correct n** | **%** |
| 1 | 22 | 15 | 68% | 26 | 23 | 88% | 19 | 6 | 32% |
| 2 | 27 | 24 | 89% | 21 | 15 | 71% | 15 | 8 | 53% |
| 21 Century | | **Correct n** | **%** | | **Correct n** | **%** | | **Correct n** | **%** |
| 1 | 21 | 18 | 86% | 17 | 14 | 82% | 28 | 13 | 46% |
| 2 | 38 | 33 | 87% | 39 | 36 | 92% | 23 | 7 | 30% |
| 3 | 37 | 30 | 81% | 46 | 36 | 78% | 24 | 11 | 46% |

| CLC | | Correct | | | Correct | | | Correct | |
|---|---|---|---|---|---|---|---|---|---|
| | | n | % | | n | % | | n | % |
| 1 | 22 | 15 | 68% | 18 | 13 | 72% | 23 | 13 | 57% |

### Design Components in the JARA Schedule

The research team scrutinised the student responses to all articles regarding the Design Components category, which included Reliability or Dependability, Validity or Trustworthiness, Ethics and Sampling. Students were provided with literature regarding this component of research as a way to explaining the significance of the Design Components category to a research project. There were varying response rates to each category with 67.4% of the cohort answering the issue of reliability/dependability, 68.2% of the cohort responding to the issue of validity/trustworthiness, 64.2% of the cohort responding to the inclusion of information related to ethics and ethics approval and 66.6% responding to sampling methods. Some students grappled to comprehend certain aspects of the Design Component category but being enrolled in an introductory research methodology subject this may account for the varying response rate and low correct response rate.

The category with the highest number of correct responses was reliability/authentic with 68.2%. The category with the lowest number of correct responses was ethics with 54.4%. Validity/Dependability had 64% of correct responses and Sampling had 67% correct response rate.

The response rate for each category in the Design Components and the percentage of correct responses for each category is presented in table 4.

**Table 4: Design Components**

| Design Components | Overall Group No. | | Response Rate | | Correct Response | |
|---|---|---|---|---|---|---|
| Validity/Dependability | **123** | **100%** | **83** | **67.4%** | 53 | 64% |
| Reliability/Authentic | 123 | 100% | 84 | 68.2% | 60 | 71.4% |
| Ethics | 123 | 100% | 79 | 64.2% | 43 | 54.4% |

| | | | |
|---|---|---|---|
| Sampling | 123 100% | 82 66.6% | 55 67% |

## Discussion

The purpose of this project was to investigate the use of the JARA Schedule with students undertaking a research methodology unit for the first time as part of the coursework in their University program. The results of this study have identified a discernible pattern that endorses the use of the JARA Schedule as a useful instrument for introducing students to the structure and various components of research that are reported in journal articles. Analysis of the student's article responses using the JARA Schedule indicate that, in general, students were generally able to identify the correct categories and key components of research from within the articles allocated to them. This allowed the instructors to clarify, revisit and revise the components in their group, for example the New Pedagogies group that had a 61% correct response rate to article one, where concepts may have been misunderstood or misinterpreted.

The pattern of responses indicates that students were generally able to identify the correct components of research in articles they were designated to read. The exception was for the category of research methods. The classification of research method had the lowest correct response rate of all categories, which is not a surprising result as this reflects the findings from the trial and the development of the schedule (Knipe & Bottrell, 2015). This finding may reflect the student's lack of experience and exposure to research and being able to initially identify the characteristic of particular types of research methods. This is not surprising given the complex nature of research as identified by Wagner, Garner, & Kawulich (2011).

This study indicates that the use of the schedule with novice research students provided them with a structure to investigate the reporting of research, which is the first stage in understanding and navigating the reporting of research. The JARA Schedule appeared to

have assisted students in having a greater understanding of the design components of research rather than a general or superficial understanding. This enabled students to then go on to critically engage with the rigor of research through a scaffolded process, which is a confirming result for the developers of the JARA in knowing that the schedule is a useful instrument for teaching students who are studying research for the first time.

The low correct response rate to the ethics category could relate to the lack of information in articles regarding ethical approval to undertake the research or could reflect the nature of the research being reported. This result reflects a similar finding reported by Knipe & Bottrell (2015) when the JARA Schedule was used to investigate the type of research methods most commonly used in in educational research. This result is unexpected because of the concern universities and departments of education have regarding the need to seek ethics approval for undertaking research in schools.

The academic staff working in the subject agreed that the use of the JARA Schedule was an important learning tool that assisted students to comprehend the various components that make up different types of research. This study has provided initial evidence on the use of the JARA Schedule as a teaching instrument along with the importance of selecting articles that clearly identify the key components of a research study, especially for those who are being introduced to research for the first time. The findings have provided a useful insight into identifying components that students find difficult to comprehend, which has assisted the teaching staff with their approach to this subject next time the unit is offered.

## Conclusion

In the experience of the authors, who have taught research methods over many years to students in initial teacher education programs at both the undergraduate and post-graduate level, students consistently describe confusion and frustration at the scope of the

field of research. This can lead to dissatisfaction, especially if students struggle to see the relevance of studying a research method unit as part of their professional degree, which can also act as a deterrent to further studies.

The findings of this project indicate that the use of the JARA Schedule with research groups and post-graduate research students would also be appropriate, as this instrument would provide a simple but useful exercise to sharpen and expand knowledge and assist in understanding the various components in research methods. This endorsement was also found during the development and trial of the JARA Schedule by early career researchers and post-doctoral students. The next step in confirming the value of the JARA Schedule would be to undertake a comparative study across Universities, where one group of students were taught using the JARA Schedule and another group taught with the customary approach.

Based on these findings, academics teaching introductory research methods units would benefit from using the JARA Schedule as a way to develop student understandings of the complexity of research methodologies. Those teaching research methods units, could utilize these findings by providing examples of clear and rigorous examples of research design. This would actively promote student learning and understandings about the various components of research published in journal articles.

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## Appendix

**Journal Article Research Analysis (JARA) Schedule ©** Knipe & Bottrell (2013)
**CODING KEY**

| **Source of Data *** | **Data Gathering *** | **Data Analysis *** | **Research Method** |
|---|---|---|---|
| Teachers/ Trainee Teachers | Survey (Pen & Paper/ On-line) | Verbal Categorisation (Categories/Themes/ Coding/Open/Axial) | Case Study |
| School Students | Interview (Face-to-face/ telephone) | Text Software Analysis | Field Study |
| School Administrators (Principal or Deputy Principal) | Observation | Descriptive Statistics (Frequency Count/Means/SDs) | Action Research |
| Parents/Community | Intervention Data | Inferential Statistics (Statistical Test/s) | Historical |
| Non-School Based Personnel | Document Analysis Techniques | Statistical Analysis of Quasi-experimental Data to test Hypothesis | Descriptive |
| Documents (school records, policy, curriculum documen | Data Mining Techniques | *Not Clear | Developmental (Longitudinal/Cross -sectional) |
| System data (existing data) | *Not Clear | | Correlational |
| *Not Clear | | | Causal |

| | | | |
|---|---|---|---|
| | | | /Comparative |
| | | | Quasi-experimental/ Experimental (Intervention) |
| Note: *Could be more than one type in a research study.<br>Not Clear = Not included/ included but not clear/ inadequate information/not relevant | | | |

**Source of Data -** refers to **where** the data were obtained by the researcher (e.g. school documents, data from students or teachers or a system data set) as distinct from what the data is about (e.g. students or teachers or administrators). 'Students' refers to students in school pre-service teachers are classified as teachers). Documents are site specific, and "system data" is already existing (*ex-post facto*) data, such as system test results and demographic information.

**Data Gathering -** refers to the **instrument/technique** used to gather data from the data source. (Note: data gathered to test a research Instrument, e.g. to test for consistency in teaching style for an intervention study, is not considered as a data source for a research study).

***Survey*** (Questionnaire) **–** Pen & Paper surveys and online surveys, also responses from children recorded by an adult.

***Interview* –** Face-to-face individual interviews and telephone interviews, focus group/research circle.

***Observation* –** Researcher observation includes video recording and taking of photographs of units under study. ***Intervention Data* –** Data gathered from a Quasi-experimental design to test hypotheses is a separate form of data gathering. Such data analysis may use parametric and/or non-parametric statistical tests to determine significance, depending on sampling procedures and tests for normality of distribution of scores.

***Document analysis* -** Information from existing documents, including audio and visual material, electronic material (e.g. text, e-mail).

***Data Mining Techniques* –** extraction and manipulation of large data sets sourced from systems, e.g. Government.

**Data Analysis ***

***Verbal Categorisation –*** Verbal data analysed and organised into categories or themes, open coding, axial coding, discourse analysis.

***Text Software Analysis –*** Verbal data in text form analysed using software such as NVivo, Maxdag, and Leximancer.

***Descriptive Statistics –*** Frequency counts/Means/Standard Deviations.

***Inferential Statistics –*** Statistical tests to test hypotheses, (could be parametric e.g. ANOVA or non-parametric e.g. Mann-Whitney U).

***Statistical Analysis of Quasi-experimental Data –*** Statistical tests as above - appropriate to the research design.

**Research Method**

***Case Study –*** a phenomenon of some sort occurring in a **bounded system**. A case study has four characteristics. First, the case is a 'bounded system' – it has boundaries. Second, the case is a case of 'something'. Third, there is an explicit attempt to preserve the wholeness, unity and integrity of the case. Fourth, multiple sources of data and multiple data collection methods are likely to be used, typically, in a naturalistic setting.

***Field Study*** – to study **intensively** the environmental interactions of a given social unit: an individual, group, institution, or community. Field-based research includes ***ethnography*** (describes what people in some particular place do and the meanings they ascribe to what they do), ***phenomenology*** (investigates the lived experiences of a small group of people), ***grounded theory*** (develops substantive theory that is derived from and grounded in data) and ***narrative*** (the way people 'produce, represent and contextualise' experiences and personal knowledge through narratives).

***Action Research*** – to develop new skills/approaches to solve problems with **direct application to a particular classroom** or other applied setting.

***Historical*** – to reconstruct the past objectively and accurately, often

in relation to the tenability of an hypothesis**.**

***Descriptive*** – to describe a situation or area of interest systematically, factually, and accurately.

***Developmental (Longitudinal/Cross-sectional)*** – to investigate patterns and sequences of growth and/or change as a function of time.

***Correlational*** – to investigate the extent to which variations in one factor correspond with variations in one or more other factors, based on correlation coefficients.

***Causal-Comparative*** – to investigate possible cause-and-effect relationships by observing some existing consequence and searching back through the data for plausible causal factors, in relation testing an hypothesis.

***Quasi-experimental/Experimental*** – the administration of treatment (intervention) and comparison with a control group, and the manipulation of variables to test hypotheses.

**Design Variables (Presence or Absence)**

*A Schedule is for categorisation of aspects of research reports according to information provided by the author/researcher. It is not intended for making judgement.*

Reliability/Dependability and Validity/Authenticity and Ethics Approval and /Sampling procedures should be included by researcher

**Journal Article Research Analysis (JARA) Schedule © Knipe & Bottrell (2013) SCORE SHEET**

| Article Identification | Source of Data (x) | | Data Gathering (x) | | Data Analysis (x) | | Design Components | Research Method (x) |
|---|---|---|---|---|---|---|---|---|
| Paper No. | Teachers / Trainee Teachers | | Survey | | Verbal Categorisation | | Validity/ Dependability Yes /No | Case Study |
| | School Students | | Interview | | Text Software Analysis | | Reliability / Authentic Yes /No | Field Study |
| Author | School Administrators | | Observation | | Descriptive Statistics | | Ethics Yes /No | Action Research |
| | Parents/ Community | | Intervention Data | | Inferential Statistics | | Sampling Yes /No | Historical |
| | Non-school Personnel | | Document Analysis | | Quasi-Experimental Data | | Random Yes /No | Descriptive |
| Notes | Documents | | Data Mining Techniques | | Not Clear | | **Type of Non-Random (x)** | Developmental |
| | System Data | | Not clear | | | | Convenience | Correlational |
| | Not Clear | | | | | | Purposeful | Casual/ Comparative |
| | | | | | | | Other | Quasi-Experimental |