

## Evaluation of Methodology: Qualitative Studies about Mobile Technology Implementation in Education

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### Abstract

The description and understanding of the learning has changed significantly over time and is still in its transformational modern stage, which necessitates exploration and investigation of the pros and cons of innovative changes in the field of education. Some teachers resist those changes and do not feel comfortable teaching through or with mobile technology as they do not want to look incompetent when they are unable to troubleshoot. The purpose of this paper is to evaluate the methodology of qualitative studies conducted on the integration of mobile technology in language classroom and teachers' attitudes towards using technology in teaching. The paper aims at examining 15 studies published in educational journals between 2006 and 2016. The articles discuss two aspects of educational technology: mobile technology integration in education and teachers' attitudes and professional development for implementing technology in language classroom.

**Keywords:** educational technology, evaluation of methodology, literature review, mobile pedagogy, qualitative studies, research articles

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**Introduction**

The contemporary view of how the learning process changes and revolutionizes with the help of mobile technology can affect decision making about educational policies. If one considers learning to be under the control of teachers in traditional teaching methods, believing that ‘teaching equals learning’, it is entirely reasonable to support policies that make teachers directly accountable for student test results. However, the assumption ‘if teachers work harder learners will learn better’ is viewed differently when a constructivist observation is put forward, looking at learning as being largely under the control of learners, where teachers and students are viewed as collaborators. Here is when the third party in a form of the mediating tool is needed to infer educational policies to focus on student motivation to achieve and progress through their studies. That mediating tool could be a mobile technology that facilitates learning and improves performance.

In our days the world is moving toward digital enhancement, which means digital enhancement will be available for just about everything people do. That is to say, digital and mobile devices already enhance people’s cognitive competences in many ways, such as memory, decision making or problem solving. To explain it better, digital tools improve our memory through data input and output as well as electronic storage. Other tools, such as digital data gathering or decision making tools develop our decision making, problem solving and analytical thinking skills by letting us search in seconds, choose the needed information and collect more data than we could have done unaided, helping us multitask and carry out quick and complex analyses. Hence, it must be stated, that digital enhancement of people’s cognition supported by mobile technologies and digital tools is a reality in every profession and every field today. However, it should not be assumed that the human brain is no longer significant and that mobile technology is smarter by itself. Quite the opposite, “It is through the interaction of the human mind and digital technology that the digitally wise person is coming to be” (Thomas 2011, p. 27). The time we live in necessitates the urge to educate digitally smart students and teachers, to embrace digital enhancement in the field of education and encourage others to do so. “With our eyes wide open to enhancement’s potential harm as well as its benefits, let us bring our colleagues, students, teachers, parents, and peers to the digital wisdom of the twenty-first century” (p. 27).

**Methodology**

This paper examines and evaluates 15 qualitative research studies in the field of education. To evaluate the studies, a table has been constructed to represent study summaries followed by their research questions (Appendix A) based on information taken from the texts: Glesne (2011), Kvale (1996), Emerson, Fretz, and Shaw (2011), Stake (1995) and Merriam (2009). The examination of the articles systematically concentrates on specific aspects of the studies in terms of qualitative research methods, designed instruments and theoretical frameworks. The methods of data collection in the reviewed articles are interviews, observations, document analysis and focus groups, therefore; this paper is organized into four sections by these types of qualitative instruments.

The first section examines seven studies that have used interviews. The second section examines four case studies that have used observational techniques as their qualitative forms of

research. The third section looks at two studies that have used document analysis. Finally, the fourth section looks at focus groups in two mixed methodological studies.

### **Section one: Interviews**

This section examines seven studies that have used interview guides. The articles are clustered by the study design. There are four case studies and three mixed methods studies among the seven articles that have used interviews as their qualitative methods of data collection. Therefore, this section reviews interviews in four case studies first and proceeds with interviews in three mixed methods studies.

Nespor's (2013) "Devices and Educational Change" examines two cases of device-mediated educational changes. One is a video module for a university course and the other is a communication device for disabled children. Both were public mandated cases practiced between 1989 and 1991 by two groups of scholars, where the first case was viewed as a success but the second was rejected. Twenty years later there are no records of the devices. The first aim of the paper is to examine the roles of devices in organizational transformations introduced by teachers where the author argues that device mediated changes are effects of non-linear processes arising out of improvisations. The second aim of the paper is to develop theoretical tools for analyzing such changes. Several strengths of the case study approach such as five components of a research design suggested by Yin (2009): "study's question, propositions, units of analysis, logic linking the data to the propositions, and criteria for interpreting the findings" (p. 27) support their use in this study. As Merriam (2009) explains, "questions of meaning, understanding, and process are appropriate for qualitative research" (p. 19). The focus on teachers where particular devices were used makes this study bounded and integrated, which are the requirements of a case study (Yin, 2009). The article has no further clarifications about the site or participant selections in any of the represented cases. The type of research question posed (Appendix A) emerges from the exploratory perspective and confirms case study as the chosen research strategy (Yin, 2009). The study used interview materials from 1989 and 2005 to trace the works of the teachers who designed the devices. The interviews were carried out with administrators, professors and students.

Contrastingly, Rasku-Puttonen, Etelapelto, Hakkinen and Arvaja (2006) give detailed description of the method and data analysis in their case study "Teachers' instructional scaffolding in an innovative information and communication technology-based history learning environment". The study was conducted in classroom setting. A case study should take place in the natural setting of the 'case' to creating the opportunity for direct observations (Yin, 2009). The authors clearly explain the case in the abstract of the study, as well as in the methods section. Yin (2009) explains that for a case study it is significant to define the case in terms of what the case is and where the case leaves off. Authors call their study a single-case study as it aims at exploring the complexity of a single case, which in this study was the use of teacher's instructional scaffolding on innovative learning environment.

Three interviews were conducted with the two teachers: at the beginning, halfway through and at the end of the project. Glesne (2011) defines this as multiple-session interviews and states that repeating interviews throughout the course of the study will aid in developing rapport and increasing the possibility that interviewees tell the researcher how they feel and act

(p. 49). Besides teachers, some students were twice interviewed in groups, when the project was half way through and at its end. Kvale (1996) suggests the qualitative researcher to interview "as many subjects as necessary to find out what you need to know" (p.101).

The study used semi structured interviews which were divided into themes of motivational issues and experience with computers. Kvale (1996) explains that semi structured interviews must have "a sequence of themes to be covered, as well as suggested questions. Yet, at the same time there is an openness to changes of sequence to follow up the answers given by the subjects" (p. 124). The interviews with both teachers and students were videotaped. Kvale (1996) explains that video recordings contain a richer representation of the interview situation than the tape. The interviews were transcribed and categorized in a table. The table with detailed explanation and transcribed examples is included in the article. "Transcripts are decontextualized conversations, they are abstractions, as topographical maps are abstractions from the original landscape from which they are derived" (Kvale, 1996, p.165). The study findings demonstrated that conceptions of instructional roles accord with the ways teachers set up the learning sessions. The authors then suggest further studies to analyze the friction of teaching and learning activities.

McGee's (2008) "Persistence and motivation" and Yang's (2012) "ICT in English schools: transforming education?" are two case studies that share many similarities in their study designs. Both focus on the same circumscribed system under natural conditions; meaning, teachers' use of ICT through innovative ways in their everyday classroom. Both case studies are designed in accordance to Merriam's (2009) belief that this design is best suited to gain an "in-depth understanding of the situation and meaning for those involved" (p. 19).

The studies do not report on the methods through which the participants were chosen. Both mention in their methods section interviews as qualitative data collection but do not provide details about the types of questions used in the instrument, neither they have data examples included in the articles. The second study conducted eight 45-60 minute interviews with eight teacher trainers assuming they would have rich experience from year-to-year observations and visits to schools. Because Yang's (2012) study aimed at finding a theoretical framework for understanding the transformation of education with technology, the interview data analysis was based on grounded theory which according to Robson (2002) 'seeks to generate a theory which relates to the particular situation forming the focus of the study' (p. 190). Also, the use of the grounded theory for data analysis is compatible with the aim of the central research question. Neither of the studies demonstrated trustworthiness of their research apparently hoping that the quality of research craftsmanship will result in "knowledge claims that are so powerful and convincing in their own right they...carry the validation with them, like a strong piece of art." (Kvale, 1996, p. 252). Both studies conclude that technology use and power in educational institutions rely on teacher training and school leadership. However, they suggest further more systematic research on transformation with technology.

Mahruf, Shohel and Kirkwood's (2012) mixed methods case study "Using technology for enhancing teaching and learning in Bangladesh: Challenges and consequences" looks at an early stage of one project's development. Stake (1995) does not see the case study as a method, but suggests that mixed methods inform the case. Six schools were randomly selected for the study.

At each school two teachers and eight students were randomly selected. According to Robson (2002), there are practical and ethical problems when randomizing is applied to people. Merriam (2009) explains that in qualitative research, a small nonrandom sample is selected precisely to understand the phenomena in depth. Because, this is a mixed methods study and both qualitative and quantitative data was generated on the same sample, random selection will be welcomed if taken from the quantitative method's perspective.

For collection of qualitative data semi structured interviews were carried out for four months. The school administrators were interviewed regarding their school policies, teachers regarding their professional development and students about their lessons. The article discusses only teachers' interview data to keep the article manageable. Interview extracts are included in the article where each piece of evidence is given a reference to specify the source of the specific teacher interview transcript. The interview questions and sample responses show flexibility allowing to direct the interview to the topic areas essential to the problem in question. The interviewed teachers received questions depending on their experience with iPods and other ICT devices. The questions were of two types: experience/behavior and knowledge questions (Glesne, 2011, p. 106). Robson (2002) and Kvale (1996) also explain that as information is gained in semi structured interviews, the interview guide and research questions will be updated to incorporate the new information into the next interview. All interviews were conducted in Bangla, recorded, transcribed and translated into English by professional translators. Kvale (1996) considers transcription a translation, both from spoken to written language, and from living and personal conversation to a 'frozen' text which is to be read analytically (p. 165). As to the translation from one language to the other or the way it was done in this study Kvale (1996) would encourage to think of transcriptions as 'interpretive constructions' and state that "the question 'What is the correct transcription?' cannot be answered—there is no true, objective transformation from the oral to the written mode. A more constructive question is: 'What is a useful transcription for my research purposes?'" (pp.165-66). The analysis were conducted using grounded theory to identify the key message the teachers wanted to convey through interviews. According to Robson (2002) "Strauss & Corbin (1998) make the explicit point that grounded theory is a general method that can be used in both quantitative and qualitative studies" (p.192). In this qualitative part of the study it is "a non-mathematical process of interpretation, carried out for the purpose of discovering concepts and relationships in raw data and then organizing these into a theoretical explanatory scheme" (p. 192). The study found out that building confidence in classroom is essential for ICT implementation and peer support and teacher guide are factors to contribute its success.

Howard's (2011) two-phase mixed methods study "Affect and acceptability: exploring teachers' technology-related risk perceptions" presents approaches of controlling resistance and overcoming the challenges of technology integration. In phase one, through four previously validated measures, the level of teachers' readiness to take risks with ICT were determined. Phase one questionnaire was designed for selection of teachers for phase two, which was a comparison case study of two schools and eight teachers. Results from phase one were used to inform phase two findings. The study focused on eight secondary school teachers from two countries: Australia and US, treating them as one sample for both quantitative and qualitative methods. The credibility of eight teachers; four from each country, was checked at all stages of data collection to avoid selecting participants who agree with the researcher's principles. Yin

(2009) explains “an investigator seeks only to use a case study to substantiate a preconceived position” (p. 72). The study does not detail about participant sampling methods, neither it gives any participant descriptions.

The qualitative data collection occurred only in phase two, through three rounds of semi-structured critical incident interviews and key informant interviews which were based on three themes: technology use, teaching and expectations of the school culture. The critical incident technique can use specific incidents or a series of incidents for rich data generation about circumstances, intention, context and behavior (Robson, 2002). In this study it proved useful because it was implemented as a tool for motivating teachers to reflect on their teaching ways and stages encouraging them to speak from the perspective of a timeline. Flanagan (1954) in Silverman (2000) speaks about critical incident technique as one offering a possibility to go straight into the heart of a subject and gather information about what is really being searched for. The author also used face-to-face key informant interviews for qualitative data collection. Both, Yin (2009) and Stake (1995) explain that case study approach is used utilizing data from document reviews, key informant interviews, focus groups and observations. Before starting the enquiry with expert teachers, the existing data from phase one and critical incident interviews was reviewed to determine what additional information was needed from key informants. Bryman (2008) explains that “Key informants often develop an appreciation of the research and direct the ethnographer to situations, events, or people likely to be helpful to the progress of the investigation” (p. 409). However, he also discusses the other side of the key informant interviews mentioning that, “...the ethnographer may develop an undue reliance on the key informant, and, rather than seeing social reality through the eyes of members of the social setting, the researcher is seeking social reality through the eyes of the key informant” (p. 409). The article includes examples from interview data analysis concerning all three themes discussed above. Though it does not represent the questions, the answer extracts show that they were most probably open ended. It is assumed so because the respondents tend to think, express values and give meaningful answers using their own knowledge and experience. According to Merriam (2009) open-ended questions are used to let participants express their views. Judging out of the answer excerpts it can be assumed that questions were presupposition type, but by no means leading (Glesne, 2011, p. 107), as the sample responses do not show evidence of leading the teachers to answer in any specific way. The interviews were transcribed, pre-checked for obvious mistakes. Through both interviews this study examined why and how some teachers thought ICT was risky and others did not. The interview results together with other methods used for data collection were triangulated. Merriam (2009) explains that one of the means ensuring ‘trustworthiness’ is through the process of triangulation. Merriam (2009) also represents four types of triangulation strategies, one of which; multiple sources of data, was implemented in this study.

Wilkan and Molster’s (2011) study “Norwegian secondary school teachers and ICT” explores the factors influencing the use of ICT in three Norwegian secondary schools. Authors give limited information about the qualitative part of the study. Unlike Howard (2011), where the same sample was used for qualitative and quantitative data collection, Wilkan and Molster (2011) used different samples for qualitative data collection. Ten Norwegian teachers were purposefully selected due to their aim of developing ICT skills. “The logic and power of purposeful sampling leads to selecting information-rich cases for study in depth” (Glesne, 2011, p. 44). The article does not include information about the participants. Individual interviews were

conducted with all participants. The data was analyzed by sorting the answers. Interview themes were about the outcomes of ICT, teachers' use of ICT, students' attitudes towards its use in class and learner collaboration. The steps of analysis followed the principles in grounded theory to develop interpretation of data and to refine theoretical analysis. Robson (2002) explains that grounded theory 'seeks to generate a theory which relates to the particular situation forming the focus of the study' (p. 190). The study does not include any qualitative data samples or analysis. The study found that most of the secondary school teachers used ICT but they were not sure on its positive outcomes for their students.

### **Section two: Observations**

This section examines four studies that have used observational techniques as their qualitative forms of research. All four studies are case studies.

The first is Hellsten's (2007) ethnographic case study "The paradox of IT in primary schools: E-learning is new but gender patterns are old!" investigating one school teachers' positive and negative reactions towards integrating educational technology in developing their professional knowledge and in providing innovative learning situations for students. Hellsten (2007) aims at exploring how primary teachers' professional knowledge and practice are influenced by IT. This study might be defined as an instrumental case study as it concentrates on the insights into the question rather than on the individuals involved. As Stake (1995) explains "The more the case study is an instrumental case study, certain contexts may be important ..." (p. 64). Moreover, this study can be categorized as a collective instrumental case study because it is assumed by the author that it will lead to what Stake (1995) calls "better understanding about a still larger collection of cases" (p. 66). The qualitative research approach used in this empirical case study is ethnography using semi-structured interviews. Merriam (2009) defines a "sociocultural analysis of a single social unit or phenomenon" as an ethnographic case study. Hellsten's (2007) is ethnographic since it depicts Swedish secondary school teachers as a community of practice and site for transformational learning. The author has labeled his study an ethnographic case study because the research focus requires him to enter into a close and relatively prolonged interaction with people in their everyday lives and actively participate as a member of the social group in the manner that Emerson, Fretz, and Shaw (1995) advise for this type of research. So this ethnographic collective instrumental case study is a holistic inquiry into the lives of four Swedish secondary school teachers to understand their ways of living, teaching and the meanings they attach to such as knowledge and innovation. The empirical and holistic approach of the study is appropriate here as it discusses different ways of IT integration in schools by different primary teachers. The clearly defined purpose is followed by the research questions that have been designed focusing on the relationship between IT, gender and teachers' professional knowledge.

The data collection lasted for three months. The process started with two hour semi-structured open ended interviews with each teacher, followed by four classroom observations and ended with follow-up two hour reflection interviews. The interview questions are attached to the article as an appendix. Both interviews were tape-recorded and transcribed. Nine types of qualitative interview questions (Kvale 1996) have been clearly followed by the researcher while constructing the interview guide as there are introducing, follow up, probing, specifying, indirect and direct questions left until the end to avoid the bias of leading the interviewee to answer a

certain way. The second reflection interview was a conversation between the researcher and the participants about the classroom observations. According to Kvale (1996), an interview as a conversation is a specific “form of conversational technique” (p. 36) and “a basic mode of knowing” (p. 37) that help the researcher understand “human reality ... as persons in conversation” (p. 37).

Classroom observations are described in this ethnographic study as participant ones. Four observations, 40 – 120 minutes each were carried out with all participant teachers. One sample lesson is included in the article as an appendix. Robson (2002) explains that “Participant observation is a widely used method in flexible designs, particularly those which follow an ethnographic approach” (p. 310). Glesne (2011) defines the goal of participant observations as “making strange familiar and familiar strange” (p. 67). Participant observations were used in this study to measure and assess the ways in which teachers choose and manage IT in their lessons. Robson (2002) adds that “... observation is the obvious method to use in assessing its effectiveness” (p. 310). Unobtrusive observation approach would have described this phase better because, as Holliday (2002) and Robson (2002) mention, it seeks to find out what is going on in a situation as a precursor to subsequent testing out of the insights obtained. The study findings suggest that IT creates a paradox and that teachers can experience IT as a positive phenomenon challenging new teaching ways and procedures.

Liu’s (2012) empirical case study “Teacher Professional Development (TPD) for technology integration in a primary school learning community” aims to assess the TPD effectiveness and its problems in a school based community. The study investigates possible ways through which TPD in professional learning community can help teachers acquire novel teaching practices. The site of the study was an urban elementary school. The school principal, administrative director and six teachers volunteered to participate in the study after discussing the project with the researcher. The study is silent about the participant selection method but it has a general description of each participant’s age, gender, position and contribution to the project. The researcher, who describes herself as a teacher trainer having six years of experience in evaluating technology related projects, coordinated the study; thus, acting as an overt researcher. Bryman (2008) explains that this ethically correct strategy obviates the need to negotiate access to organizations or to explain why you want to intrude people’s lives and make them objects of your study (pp. 403 - 405). He also calls this ‘participant-as-observer’ and describes this role as similar to ‘complete participant role’, with a difference that members of the social setting are aware of the researcher’s status as a researcher where he is engaged in regular interaction with participants in their daily lives (p. 410). Robson (2002) also sees this option as feasible and explains that “This stance means that as well as observing through participating in activities, the observer can ask members to explain various aspects of what is going on. It is important to get the trust of key members of the group” (p. 317). The researcher participated in this study not as a teacher but a coordinator of the project who was responsible for the project setup and its further development. “One strategy for the participant as observer is to evoke particular situation or behavior from the members of the group which essentially involves setting up a situation which has meaning for the group and then observing what happens (Robson 2002, pp. 317 - 318).

Observation was the primary evaluation method of the study to answer its research question. Observations can and should be conducted when they allow the researcher to address the research question (Glesne, 2011). The method was used to collect data about teachers' instructional practices to detect changes in their teaching after accomplishing professional training with them. Teachers then were asked to do peer observations concentrating on their peers' technology use, instructional strategies and behaviors during the lesson. There are four class observations discussed in the article. They include detailed descriptions of observed periods followed by discussion excerpts from all participants regarding specific parts of the lessons. The author mentions that she has written up field notes into a narrative account right after every observed period. "The longer you wait after the even in constructing a narrative account, the poorer such an account will be in terms of its accuracy and completeness" (Robson 2002, p. 324).

Hsu's (2012) "Examining the impact of educational technology courses on pre-service teachers' development of technological pedagogical content knowledge" suggests activities to prepare teachers to teach with technology. It intends to examine the impact of IT courses on pre-service teachers' knowledge of technology integration. Unlike Liu (2012) who used observations as the primary source, Hsu (2012) used observations as the third source of the data collection. Glesne (2011) explains that "Multiple means of data development can contribute to research trustworthiness and verisimilitude, or sense of authenticity" (p. 48). Maximum variation sampling strategy was used in this qualitative study to select the participants. An invitation email was sent to 50 student teachers before the commencement of the semester. Out of 15 volunteered student teachers eight were selected after the researcher consulted with the office of Clinical Experiences. All eight participants were representatives of eight different school districts with different levels of IT resources. Glesne (2011) explains that maximum variation sampling method "searches for common patterns across great variations" (p. 45). It is also called heterogeneous sampling, the implication of which is that "the greater the heterogeneity of a population, the larger a sample will need to be" (Bryman, 2008, p. 182). Robson (2002) explains that heterogeneous sampling aims at detecting themes which cut across the diversity of people or cases. The researcher carried out observations in all eight schools. Glesne (2011) defines this as multiple sites and explains that looking at different sites should increase the trustworthiness of common themes (p. 50).

Demographics of the participants and classroom technology resources are included in the article in a form of a table. The observations were carried out following a checklist which was designed following the features of constructivist approach proposed by Doering and Rolyer (2009). The article does not speak about observational method; however, judging out of the checklist it can be assumed that observations were structured. "Structured observation, often called systematic observation, is a technique in which the researcher employs explicit formulated rules for the observation and recording behavior" (Bryman, 2008, p. 257). A checklist with evidence of observations, data source and example strategies is included in the article in a form of a table. Each participant was observed for a predetermined period of time using the same rules. "These rules are articulated in what is referred to as an observation schedule which bears many similarities to a structured interview schedule" (Bryman, 2008, p. 257). Observer as participant technique was used in the study as the researcher remained primarily an observer and had limited interaction with the student teachers (Glesne, 2011). The study found out that

teachers had concerns of when and where to implement educational technology and came up with suggestions for further research.

### **Section three: Document analysis**

This section examines two studies that have used document analysis as their qualitative instruments.

Troudi and Alwan's (2010) exploratory study "Teachers' feelings during curriculum change in the UAE: opening Pandora's Box" is informed by interpretive paradigm. It examines secondary school female English language teachers' awareness of curriculum change in the UAE. Merriam (2009) explains that in interpretive research, education is considered to be a process and school is a lived experience. Similarly, Glesne (2011) mentions that it "allows the researcher to approach the inherent intricacies of social interaction, to honor complexity, and to respect it in its own right" (p. 25).

The study participants were 16 Arab female teachers; one was a national teacher and the other 15 were expatriates. The authors selected the participants through two approaches: purposiveness and accessibility, because one of the authors, being female, was not allowed to access boy's schools, as she could not work with male teachers due to cultural restrictions. However, she had full access to girls' schools and work with female teachers. As Bryman (2008) contends, methodologies must tend toward consensus or culturally expected views. Holliday (2002) explains that the researcher and the research participants must enter into a relationship of culture making (p. 149). Curriculum documents and other curriculum related materials were the primary sources for this study. "Although the use of physical trace measures has never achieved much more than curiosity value in the social sciences, there has been substantial interest in the analysis of a particular kind of artifact: the documents" (Robson, 2002, p. 348). Glesne (2011) explains that "Your understanding of the phenomenon in question grows as you make use of the documents and artifacts that are a part of people's lives" (p. 89). The data were collected on the year of the curriculum change. Constant comparison technique was used to compare even small incidents in the data. Merriam (2009) explains that instant comparisons lead to categories which later on can lead to theory formulations.

Gao's (2012) "Digital technologies and English instruction in China's higher education system" explores teachers', administrators and policy makers' views about technology implementation in College English Curriculum Requirements. Like Troudi and Alwan (2010), Gao (2012)'s study involved curriculum documents, policy statements, official syllabus documents, course programs from three national universities and nationally approved textbooks to understand the interactions of teachers, administrators and policy makers. Content analysis and data coding were used to map out the picture and answer the research question. "Content analysis is codified common sense, a refinement of ways that might be used by laypersons to describe and explain aspects of the world about them" (Robson, 2002, p. 352). The article does not speak about the coding scheme, manual or schedule used for content analysis (Bryman, 2008, p. 283), however; it mentions that document review informed the questions designed for teacher interviews, such as issues of IT skills and use. Glesne (2011) states that "Documents can raise questions about your hunches and thereby shape new directions for observations and interviews" (p. 85). The study found out that there is a gap between the policy and ICT pedagogy in China

tertiary teaching suggesting further research on exemplary learning designs with educational technology.

#### **Section four: Focus groups**

This section reviews two mixed methodological studies that have used focus groups as their qualitative forms of research.

James's (2006) "A study of participatory action research (PAR) as professional development for educators in areas of educational disadvantage" challenges its use in the USA as a 'teacher research'. Through participatory action research this study addresses the gap between researchers and the intended beneficiaries of research (Whyte, 1991), who in this study are homeless children. James (2006) has labeled his study participatory action research because it follows the principles advised by Whyte (1991), which are the collective investigation of the problem, the indigenous knowledge to better understand the problem, and a desire to take collective action to deal with the problem.

Eight Primary school administrators, eight teachers and one homeless shelter education provider formed the educators' team who conducted face-to-face meetings once every two months throughout the 2003-04 school year. The study does not explain how the members of the team have been chosen and where exactly it was carried out rather than simply mentioning the project known as Colorado Educators Using Participatory Action Research to Study Homeless and Highly Mobile Students (CO PAR). Each participant wrote a report after completing one or more cycles of participatory action research and received a \$ 3000 stipend upon the completion of the study. The qualitative data was collected through focus groups and interviews. The study does not mention how many focus groups there were and how long the gatherings were scheduled for. Morgan (1997) explains that, "The safest advice is to determine a target number of focus groups in the planning stage but to have flexible alternative available if fewer or more groups are needed" (p. 44). Groups consisted of 17 participants, which are considered to be large according to Glesne (2011): "Small groups of six to ten participants generally work best" (p. 132). If focus groups are large, "they tend to break into subgroup discussions that are difficult to facilitate and record" (p. 132). It was a homogeneous focus group in terms of profession, as all 17 members were educators. "... homogeneous groups ... can allow for a more free-flowing, relaxed conversation as well as facilitate the development of analytical concepts based upon data gathered in different kinds of groups" (p.132).

To assist in the interpretation of the data the author of this study used an analytic technique of reflective journal writing. The study does not speak about the themes or criteria according to what the contexts were analyzed. As Glesne (2011) states, "the comments and thoughts recorded as field log entries or as memos are links across your data" (148). The study outcomes were verified through triangulation which is explained by Stake (1995) as a quality assurance tactic to ensure that research is based on a disciplined approach and not simply a matter of intuition, good intention and common sense (p107).

Hu's and McGrath's (2011) "Innovation in higher education in China: are teachers ready to integrate ICT in English language teaching?" explores the implementation of a national reform in China called College English reform. Qualitative data served as the main element to answer

the research questions. It derived from observations, interviews and focus groups. Two teacher and two student focus groups were held during the study. Johnson (1996) in Robson (2002) argues from a critical realist perspective that focus groups have considerable potential to raise consciousness and empower participants (p. 284). Because the sampling for proportionality was not the main concern of the study, it used purposive sampling. Although 44 out of 78 teachers who participated in the quantitative enquiry expressed willingness to participate in focus groups, a smaller sample of 12 teachers were selected for this study following five criteria: gender, age, title, experience and teaching materials used. Glesne (2011) explains that "...homogeneous groups in terms of gender, age, race, or sexual orientation, can allow for more free-flowing, relaxed conversation as well as facilitate the development of analytical concepts based upon data gathered..." (p. 132). The article does not include information about the selection criteria of the student focus groups. The author was the moderator of one hour interviews. Glesne (2011) states that "Generally, focus group gatherings are scheduled for one to two hours" (p. 132). Participants as auditors were asked to check the transcripts. Five questions with sample answers and analysis are included in the article. "Four or five good questions should suffice for somewhat structured focus group session" (p. 132). Focus group interviews were audio-recorded. Robson (2002) explains that "The tape provides a permanent record and allows you to concentrate on the interview" (p. 290). The data was transcribed and interpreted. Categories were identified and relationships between them were analyzed.

### Conclusion

"No single study or text could hope to cover all you need to carry out 'real world' enquiry" (Robson, 2002, p. xxi). This evaluation was wide-ranging considering issues involved in designing, carrying out, analyzing and reporting several types of studies. It provided a clear overall structure, while seeking to address some of the complexities in current literature. This was an important task to make features of flexible research design explicit in a sense that the design changes and develops as a result of the researcher's data gathering experiences. To conclude, the critical appreciation of the arguments and evaluation of the qualitative methods that have been used on the topic of this paper assisted in identifying the qualitative methods to use for possible research studies based on mobile classroom teaching pedagogies.

### Bout the Author:

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**Appendix A:Study Summaries**

<p><i>1. A study of participatory action research as professional development for educators in areas of educational disadvantage</i></p>	<p>This mixed methodological study aimed at evaluating the efficacy of participatory <b>action research</b> methodology (a) as a tool to engage both administrators and teachers and (b) as a process of professional development through which to address issues of educational disadvantages. Interviews and focus groups with participants were used to collect data for qualitative analysis. The findings suggested that PAR allowed both administrators and teachers to engage in social and educational issues involved with homeless students and to develop specific practices to help them. (James, 2006)</p>	<p><i>What was the experience of educators with PAR process and why might PAR be a useful tool in addressing educational disadvantage?</i></p>
<p><i>2. Technology integration in the schools of Guyana: A case study</i></p>	<p>This study aimed at exploring the impact of using learning technologies, specifically interactive radio instruction for teaching math and Success Maker software for enhancing literacy skills. 275 surveys, interviews, observations, focus groups and qualitative expert reports of classroom use of learning technologies were used as data collection methods. The study found that the Success Maker software was a great resource and students were enthusiastic to learn once that technology session was timetabled. (MacKinnon, 2010)</p>	<p><i>What are the impacts of, and associated challenges with, implementation of interactive radio instruction for teaching mathematics? What are the impacts of, and associated challenges with, implementation of computers as teaching and learning tool?</i></p>
<p><i>3. Devices and Educational Change</i></p>	<p>This paper explores 2 <b>cases</b> of device-mediated educational change. The first involves a computer-assisted interactive video module that provided 30m instruction for a university course. Interviews with admin. And professors, observations were used for data collection.</p>	<p><i>To what extent did the use of technology facilitate a learning environment which encouraged collaboration and knowledge construction?</i></p>

<p><i>4. Teachers' instructional scaffolding in an innovative information and communication technology-based history learning environment</i></p>	<p>The study aimed at examining how teachers with different conceptions of their teaching roles use different types of instructional scaffolding while working in an innovative learning environment. The study also aimed at investigating the role of instructional scaffolding in different types of learning activities following Vygotsky's theory. The class process was video and audiotaped, teachers and students were interviewed and questionnaires were administered before and after the study for data collection. The results showed that teachers with different conceptions of their role demonstrated differences in the nature of their instructional activities. (Rasku-Puttonen, Etelapelto, Hakkinen and Arvaja, 2006)</p>	<p><i>How are associations among people and things accomplished? Do associations come slowly allowing different kinds of users at different stages as a device takes form or do commitments come together all at once?</i></p>
<p><i>5. Teachers' feelings during curriculum change in the UAE: opening Pandora's box</i></p>	<p>This qualitative exploratory interpretive study attempted to understand teachers' perceptions of curriculum change in the UAE. The study looked at innovations that took place in textbooks used in grades 10 through 12. The teachers didn't have the official curriculum but only the introduction and contents sections of the main textbook. The curriculum change model was top down with almost no chance for teachers to play any active role. Data collection methods included repeated face-to-face semi-structured, group interviews and document reviews. The data revealed that participants had contradictory affective reactions to curriculum change since they approved of some aspects of change but were disturbed by other aspects. (Troudi and Alwan, 2010)</p>	<p><i>What do English language teachers understand by 'curriculum' in the UAE context? How do the teachers feel about the curriculum change in the UAE context?</i></p>
<p><i>6. The paradox of IT in primary schools: E-learning is new but gender patterns are old!</i></p>	<p>This <b>ethnographic case study</b> aimed at examining the ways teachers experience IT as "solution" or "frustration" in developing their professional knowledge in one school. Interviews and observations were used as methods of data collection. The study showed that in that school It is used as a creative tool. It also showed that women teachers found it more difficult than men to use IT into their practice. (Hellsten, 2007)</p>	<p><i>Are there differences between the sexes regarding teacher's ways of adopting IT? Are there social or cultural factors other than gender which affect teachers' IT use and attitudes towards computers?</i></p>
<p><i>7. Teacher professional development for technology integration in a primary school learning community</i></p>	<p>This study aimed at understanding teacher professional development (TPD) process where there was sufficient IT integration through teacher participation in a school-based community. It looked at TPD effectiveness and its potential problems. Instructional observations and teacher reflections were used as data collection methods. The study findings revealed that teachers changed their perspectives on methods for It integration from lecture based teaching to student-centered teaching via processes of teacher PD. (Liu, 2012)</p>	<p><i>Can teacher professional development for technology integration in a primary school learning community change teachers' attitudes towards using It in classroom?</i></p>

<p><i>8. Examining the impact of educational technology courses on pre-service teachers' development of technological pedagogical content knowledge</i></p>	<p>The purpose of this <b>case study</b> was to examine the impact of educational technology courses on pre-service teachers' development of knowledge of technology integration in a teacher preparation program in the USA. The data was collected through interviews, document reviews and observations. The findings showed that it is necessary to offer a course that focuses on technology skills early in a teacher education program, allowing pre-service teachers apply their learned skills in later courses.</p>	<p><i>How did the educational technology courses affect development of the pre-service teachers' knowledge of technology integration in a teacher education program?</i></p>
<p><i>9. Using technology for enhancing teaching and learning in Bangladesh: Challenges and consequences</i></p>	<p>This <b>mixed method</b> study focused on factors relating to the use of technology to support school-based professional development for in-service teachers in Bangladesh. Qualitative methods involved in this study were classroom observations and semi-structured interviews. The study found that mobile technologies can assist learners at the point of need and in ways that fit in with their lifestyle.</p>	<p><i>NO research question stated</i></p>
<p><i>10. ICT in English schools: transforming education?</i></p>	<p>This <b>empirical study</b> demonstrated that sustained educational transformation using ICT involves more than pedagogical awareness alone, and that a broader array of factors should also be taken into consideration moving from traditional top-down to a bottom-up approach. <b>Grounded theory</b> used for interview data analysis. The quality of tech. potential relies more on school leadership to initiate more effective teacher training.</p>	<p><i>NO research question stated</i></p>

<i>11. Innovation in higher education in China: are teachers ready to integrate ICT in English language teaching?</i>	This case study examined teachers' attitudes towards ICT use in education and ICT-related continuing professional development policies and practices in a university in China. <b>Mixed methods</b> were used: observations, semi-structured interviews and focus groups were used to collect data for qualitative analysis. The study found that teachers can make comprehensive reforms possible but appropriate facilities and resources are essential, relevant professional development is key and on-going support is vital.	<i>What are EFL teachers' attitudes towards the adopting of ICT in language teaching and the wider context? What are EFL teachers' experiences of CPD? How has CPD met their needs in relation to the national reform and specifically ICT use?</i>
<i>12. Persistence and motivation</i>	This <b>intrinsic case study</b> examined a new teacher's beliefs, motivations and perceptions about how and why technology can and should be used to support student learning. Data were generated through e-mail exchange over the course to identify themes: nontechnical focus, expectations, rationale, impact and beliefs. The study found out that for this teacher persistence was critical to learning in absence of pre-service learning opportunities in the effective application of tech. to support learning.	<i>NO research question stated</i>
<i>13. Digital technologies and English instruction in China's higher education system</i>	The paper reported on a study that investigated the views of teachers about use of technology embedded police. It tried to clarify how lecturers in China had been oriented by College English Curriculum Requirements (CECR) towards pedagogical change. <b>Mixed method</b> was used for this study. The qualitative paradigm was based on document review and individual interviews. The study found a significant gap between policy and reality of pedagogical change.	<i>What are the expectations of higher education English teachers in the use of ICT in implementing the CECR policy? What is the perception of higher education English teachers regarding the expectations of these mandatory syllabus requirements?</i>
<i>14. Norwegian secondary school teachers and ICT</i>	This <b>mixed method study</b> explored to what extend do teachers use ICT in their classroom teaching and what teacher-level factors influence the use of ICT. 10 focus group interviews were used for qualitative analysis. The study found that integrating ICT in teaching is a difficult and gradual process and teachers must be given time to find their own way to merge ICT with their teaching style.	<i>To what extend do teachers use ICT in their classroom teaching and what teacher-level factors influence the use of ICT?</i>
<i>15. Affect and acceptability: exploring teachers' technology-related risk perceptions</i>	This two-phase <b>mixed-methods</b> design study presented a way to understand the complex weighing of teaching and technology values when teachers' choose, or choose not to, integrate technology in their teaching. The case studies in phase 2 comprised of 3 rounds of semi-structured critical incident interviews, classroom observations, document analysis and informant interviews. The findings suggested that as teachers' computer-efficacy decreased the perceived risks related to technology integration increased.	<i>What risks are the teachers asked to take when using technology and how do they perceive these risks?</i>