Critique of an empirical study for EDLI 7000 (RESEARCH METHODS)
Technology, selfhood and physical disability, using the chain of reasoning

Krathwohl (1998) observes that studies that purport to be reliable and submit generalizations must follow a standard sequence for presenting the findings of their research. This sequence forms what Krathwohl calls a chain of reasoning and includes the following elements (p. 64): an explanation (how a hypothesized relationship works), rationale (basis for this thinking), theory (how the relationship fits into a larger scheme of things), or point of view (how a researcher views this relationship and compares or contrasts this with the views of others), that is entwined and built on prior research.

Fig. 1 The chain of reasoning model adapted from Krathwohl, 1998, p. 64

The questions, hypothesis, or model is translated into the design of the study and include: who (subjects), where (situation), why (treatment or independent variable), what (observations or measures), how (basis for sensing attributes or changes), and when (procedure), following a verse from Kipling’s Elephant Child (1902): I kept six honest serving men They taught me all I knew: Their names were What and Why and When And How and Where and Who. These choices by the researcher determine how data collections are done to examine the relationships. Subsequently the data is analyzed, and conclusions are drawn to reflect the most appropriate interpretation of the data.

Using this chain of reasoning as a conceptual framework, I will critique Lupton and Seymour’s (2000) exploratory study. In a strict sense, because the authors themselves consider this only an inductive exploratory study that cannot be generalized, this paper might not qualify for a detailed analysis using the chain of reasoning. Nevertheless, I use the chain of reasoning to articulate what I consider are the studies strengths and weaknesses in the following pages.
Strengths:

The abstract of the study on p. 1851 of the study captures the essence of the study very well. It includes: references to literature on human-technology interaction, lacuna in past studies, dominant research question, design of study, and the findings.

All thirteen paragraphs in the introduction (pp. 1851-1854) reference numerous sources from literature to detail the study’s explanation, rationale, theory, and point of view. Specifically, paragraphs 1, 2, 10, 11, 12, and 13 detail assumptions, gaps and bias in previous studies. The authors argue that other than a few autobiographical accounts, there is “little recent literature that looks at the role played by technologies in everyday life for people with disabilities” (p. 1853). What is unique about this study is the authors attempt to solicit the opinion of people with disabilities on their use of and attitudes towards technology – not just computerized technologies often developed for the general community, but also those designed especially as an aid for people with specific disabilities (e.g. wheelchairs, remote control and hydraulic lifts, ultrasound sensors, water leveler, “talking” gadgets, etc.)

The research question is discussed in the third paragraph of the introduction and fourth paragraph of the study’s design. The “constructionist” and “materialist” theoretical framework of the authors is elaborated on in the fourth and fifth paragraphs of the introduction. Their footnote on p. 1852 and sixth paragraph of the introduction distinguishes between the terms disability and impairment, and highlights the debate among commentators in disability studies. They articulate their view of disability as a continuum rather than a dichotomy between normal and disabled. In the seventh paragraph of the introduction they observe that their materialist perspective leads them to believe that technologies could be “regarded as offering a tangible way of redressing sociocultural disadvantage and marginalization” (p. 1853). Paragraphs 8, 9, and 10 underscore the double-edged nature of technology for people with disabilities.

The design of the study is described in four paragraphs on p. 1854. It includes details about: who (15 people with disabilities), where (Adelaide, Australia), why (articulates the limited scope of this inductive study, rather than a generalizable hypothesis testing study), what (in-depth interviews), how (identifying factors which enhanced or inhibited the engagement of people with disabilities with technology), and when (audiotaped transcribed interviews by research assistants to collect data).

In the fourth paragraph of their design of the study, the authors articulate how they analyzed the data using the following research questions: “How did the participants conceptualize technology? How did they use it? What was the relationship between their particular disability and the types of technology they preferred to use? How did notions of self and embodiment interact with the conceptualization and use of technology? What are the facilitators and barriers to the use of technology?” (p. 1854). The authors organize the analysis of the study using four major themes that emerged from the interviews (pp.
1854-1860): types of technology used, the benefits of technology, technology and identity, and problems with access.

In the conclusion (pp. 1860-1861) of their study, the authors detail the positive attributes that technological enhancements provided the participants – “communication with others, mobility, physical safety, personal autonomy, control, independence, competence, confidence, the ability to better engage in social relationships, the workforce and participation in wider community” (p. 1860). They also articulate the dislike of and resistance to technology that some participants voiced. Acknowledging the limitation of the study (final paragraph in conclusion), the authors highlight two findings that might be supported by further research.

1. Using technologies for people with disabilities might be risky because they “have the potential both to exacerbate disability and to enhance selfhood and embodied capacities” (p. 1861).
2. It is important to devise strategies for adequate funding for appropriate equipment and provide sufficient training for people with disabilities.

Weaknesses:

- Small sample size (just 15 participants) makes it difficult to generalize or verify conclusions.
- The authors seem to be overusing descriptive participant quotes (at least 34 elaborate quotes) for analysis, without meshing them with findings from literature.
- This narrative aspect without any statistical analysis (even if limited) does not make for a very strong case for the themes.
- The presentation of the analysis is very descriptive and does not use alternate ways for presentation (e.g. matrices, figures, etc).
- The perceptions of people with disabilities were not backed up with findings from literature in the analysis.

References


Understanding simple physics principles will be advantageous for students’ transitioning into an increasingly technological workplace. However, it is common knowledge that the word “physics” conjures personal struggles for several individuals. Based on the researcher’s extensive personal experience teaching physics in high schools, the proposed study seeks to identify a limited number of physics concepts from K – 8 (within the framework of Colorado and National standards) in which students have shown continued difficulty. In the preface to the first edition of *How We Think* (Dewey, 1933), the noted educationist compares the uncanny resemblance of children’s curiosity, imagination, and love for experimental inquiry to their innate scientific mind. The proposed study will attempt to nurture this “innate scientific mind” of students and try to unravel their current understanding and experience in a virtual gaming environment. Several researchers (Avent, 1988; Bandura, 1997; Dewey, 1933; Doty & Stanley, 1985; Harris, 1999; Herring, 1998; Rogers, 1942; Whitehead, 1929; Zunker, 1994) have observed that involving students sooner in their career development process helps to not only raise their awareness on the importance of self-reflection but also provides meaning to their present education. Bandura (1997) observed, “the choices people make during the formative periods of development shape the course of their lives.” (p. 422). The purpose of the proposed study is to track, within the virtual environment, choices, trends, and achievement of specific benchmarks as the students play epistemic games.

**STATEMENT OF THE PROBLEM**

Could physics teachers facilitate the development of higher order thinking skills in students by using epistemic games, which combines conceptual physics with career development?

**RESEARCH QUESTIONS**

The proposed study seeks to find answers and further our insights on higher order thinking skills by investigating (in two stages) the following questions:

**Stage 1:**
1. What intervention strategies by teachers do students in the selected schools find useful for increasing their CSAP science results?
2. What are some existing student difficulties with the physics curriculum from K-8 in the state of Colorado?

**Stage 2:**
3. What activities might promote self-reflection, self-development, and higher order thinking skills when students are engaged with epistemic gaming?
4. What popular choices (and support systems) do students use to achieve specific benchmarks in physics from K-8?
LITERATURE REVIEW

Collins and Ferguson (1993), Morrison and Collins (1995) published seminal ideas about epistemic games in their research articles. Epistemic games are general-purpose strategies for analyzing everyday phenomena and guiding inquiry. Typical strategies include: setting goals, playing within the rules or constraints, making different moves and transfers to different games. Epistemic forms are target structures or patterns or models that individuals use to construct knowledge. The purpose of playing epistemic games is to develop or complete an epistemic form that satisfies an inquiry. The choices, trends, and achievement of benchmarks mentioned earlier represent some epistemic forms. Other researchers (Kafai, 1995; Reiber, 1996) have observed that by combining technology with instructional games, students learn subject content effectively.

A review of literature in physics education (Griffiths, 1997, Hestenes, 1998) reveals the amateurish state of physics teaching. Currently several researchers (Elby, 2001; O’Kuma, Maloney, and Hieggelke, 2000; McDermott, Shaffer, and the Physics Education Group, 2003) are surveying epistemological studies, tasks that might dispel student difficulties with physics concepts, and instructional strategies that will mentally engage students in learning physics.

Researchers such as Feller and Davies (1999) seek to promote school-to-career (STC) initiatives by highlighting popular debates. They deliberate and reason that STC initiatives would provide access to some of “the best educational strategies for all students.” (p. 121).

Contemporary thinking on classroom management paradigms (Bruner, 1996; Freiberg, 1999), call for pedagogies that develop students’ metacognitive skills to enhance their motivation and achievement. Metacognition (Reigeluth & Moore, 1999) is the ability to think about one’s own thinking. It is a process of learning about one’s own learning, which encompasses “reflective thinking” (Dewey, 1933), “critical thinking” (APA Delphi Report, 1990), and “breakthrough thinking” (Perkins, 2000).

SAMPLING

The schools for the proposed study will be selected based on their significant improvement in CSAP (Colorado State Assessment Program) scores from 2000 to 2002 in the Grade 8 science test. The subjects will be a stratified random sample of students from select K-8 schools in Colorado. Using the five CSAP categories (unsatisfactory, partially proficient, proficient, advanced, proficient and above), ten students (two students from each categories – based on their CSAP reading/writing scores) will be randomly chosen from each grade to ensure representativeness of all five categories within each grade. With nine grades (K-8) and ten students per grade, the study sample will comprise 90 students from each school. Two other factors, equal representation of
both genders and an inclusion of diverse ethnic backgrounds, will also be considered, while selecting the subjects.

METHOD AND ANALYSIS

The researcher will survey the existing multi-billion dollar games software industry to identify three companies (whose software will be chosen based on convenience and interactivity for players), which might allow use of their gaming software for research purposes in classrooms. Three companies will be chosen to reduce unintentional bias of selectively promoting one company.

Although students are spontaneously motivated to play computer games, these games will require students to construct their own personal story as they engage in the gaming activity. This personal stake for students might provide the contextual framework for learning. The games will provide opportunities for both playing alone and with opponents. Students would also be encouraged to send their stories for posting in an online Gallery. As they play (individually or otherwise) within the virtual gaming environment, their achievement of benchmarks will be tracked and mapped online.

Using data mining tools such as Microsoft EXCEL/ACCESS, and SQL/Server, the information stored online will be analyzed to answer the research questions detailed above. In addition, the study will attempt to discover “points of reference” (Dewey, 1933) that students often use for finding their bearings in a gaming environment even as they further their conceptual understanding. Do students perform well when they work individually, or as a collaborative team in a virtual gaming environment? Frequent support systems (instructions, help desk, model game, FAQs, gallery of games, simulations using java applets, etc.), that student’s use will be analyzed for patterns in their decision-making process.

IMPLICATIONS OF STUDY

The proposed study attempts to examine student difficulties in physics, and identify specific types of support systems that help them develop in confidence and competence. By developing epistemic games from K-8 in physics, the study attempts to provide students with a wider choice while challenging themselves with understanding physics, within a virtual gaming environment. Although the study attempts to promote further research on conceptual physics and higher order thinking skills using epistemic games, the subject “physics” is only illustrative. Epistemic games will be used in the proposed study merely as an effective front-end tool for investigating the problem. Epistemic games or a gaming approach need not be confined to specific learning disciplines or domains, because the structural aspect of games motivates the players. Simon and associates (1992) observed, “finding the underlying bases of human choice behavior is difficult” (p. 41). Identifying canons of students’ choices, which influence their goal setting, decision-making, and problem solving skills, within a virtual gaming environment, could inform further research, design and development of epistemic games that promote higher order thinking skills.
REFERENCES


Elby, A. (2001). Helping physics students learn how to learn. American Journal of Physics, 69 (S1), S54-S64.


STUDENT PERCEPTIONS ON CAREER DEVELOPMENT
AT AN INNER CITY MIDDLE SCHOOL

INTRODUCTION

The study proposes that a well-developed career development program would be a useful institutional strategy because students could be encouraged to develop their career management competencies during the crucial, turbulent teenage years. After briefly defining career development, this paper will discuss the research problem, describe the methodology, and briefly outline the data analysis processes planned for this study. The study seeks to develop a framework for a coherent career development policy at an inner city middle school in Denver by using the data collected from interviews with ten students in grade eight, the school counselor, the parents, and questionnaire responses of some alumni of the school.

The foundations for the growth of career development were provided in the early part of the twentieth century by several thinkers. Dewey, for instance, in his seminal book *Democracy and Education* (1916, pp. 368-369), argues that from a practical and philosophical perspective, the goals of education must be tied to career development. Calling for educational reorganization, he states:

..the key to the present educational situation lies in a gradual reconstruction of school materials and methods so as to utilize various forms of occupation typifying social callings, and to bring out their intellectual and moral content.

While different definitions for career development exist, a number of theorists have argued that it is part of a lifelong learning process that should help students with decision making and goal-setting, problem solving, developing aspirations, beliefs, values, aptitudes, interests, personality characteristics, job-seeking and job-holding skills, and knowledge of the world of work. (Avent, 1988, p. 61; Harris, 1999, p. 9; McCormac, 1991; Tolbert, 1974 quoted by Zunker, 1994, p. 3;). Redekopp (2002, quoted by Jarvis and Keeley, 2003, to be published) argues that career development is also about adaptability and leadership.

Increasingly, career development is about leadership. It’s about the personal leadership required to take action, take risks, and learn new skills. It’s also about the leadership required to help others develop, grow, and learn. Creating things that don’t yet exist is now part of career development, not just choosing among existing options. Preparedness for an environment that does not exist is key to adaptability and leadership – therefore, it’s key to career management.

Governmental polices increasingly call for the need to bring about a learning society with their legislations such as the *No Child Left Behind* Act of 2001, and close the achievement gap through accountability, flexibility, and choice. Feller and Davis (1999) argue that school-to-career initiatives would provide access to some of “the best educational strategies for all students” (p. 121). Other researchers (Avent, 1988; Bandura, 1997; Dewey, 1933; Doty & Stanley, 1985; Harris, 1999; Herring, 1998; Rogers, 1942; Whitehead, 1929; Zunker, 1994) have observed that involving students sooner in their career development process helps to not only raise their awareness on the importance of self-reflection but also provides meaning to their present education. Bandura (1997) observed, “the choices people make during the formative periods of development shape the course of their lives” (p. 422).
RESEARCH PROBLEM

Although career development has been widely researched, there has been a dearth of material that reflects the perspectives of the students. In the introduction to her book *Career education: Contesting policy and practice*, Harris (1999, p. 15) notes that a separate book will be required to present the experiences and views of students who are at the receiving end of career development programs. Eccles (1993, as cited in Herring, 1998) reports that adolescence represents a period of change frequently confounded by confusion and uncertainty. Other researchers, like Harris and Grede (1977, as cited in Doty and Stanley, 1985) have pointed out very serious problems in students’ career choices – the mismatch between student aspirations and ability.

The title of Schneider and Stevenson’s (1999) book *The ambitious generation: America’s teenagers, motivated but directionless*, summarizes the current situation. Their landmark study involving 7,000 teens shows how the lives and dreams of American teenagers have changed in the past 50 years. Miller, Goodman & Collison (1991) observed in 1990 in their study to foster career development: almost 65% of those surveyed said that if they had to start their careers anew, they would get more information about their strengths, preferences, and goals in relation to work and potential career choices. This study prompted the National Occupational Information Coordinating Committee to develop the National Career Development Guidelines to foster career development at all levels from kindergarten to adulthood. Handy (1990) observes that the harsher realities of competition have resulted in the following situation: “No longer is there the feeling that somewhere someone is thinking about your life, watching your development, planning your next steps. It probably always was an illusion, now few ever pretend” (p. 159).

Consequently, the proposed study seeks to examine the factors that influenced the career choices of ten eighth grade students at The Middle School (TMS). TMS is an inner city middle school in the Denver Metro Area belonging to the Rocky Mountain School District. TMS provides quality education for students from diverse backgrounds from grades five to eight. According to the Colorado Department of Education School Accountability Report for 2001-2002 school year, the overall academic performance of students from grades 7-8 in TMS is low and the overall academic improvement is stable. However, by recently offering *The Middle Years Program* (MYP) of the International Baccalaureate Organization, which is designed for students between the ages of 11 and 16, the school has improved on its overall academic performance and attracts students from other school districts too. This program, having students at the center of the curriculum model, provides a framework of academic challenge and life skills appropriate to this stage of development. TMS also has a school counselor.

The study will specifically aim to:

- identify the key factors that influence the career choices and goals of the students at TMS,
- evaluate the career development program in the school,
- outline the issues and implications of this study for management, and
- arrive at a draft framework for an overall policy on career development at the middle school.

Bassey (1999, p. 43) observers that researchers, who regard themselves as potential variables, “may use personal pronouns.” Following this observation of Bassey and Golby’s advice (1994, p. 27), I acknowledge any unintentional influence that my presence may have on the perspectives that I will share in this study. For these reasons, I will not restrict the writing that follows “to the cold third person” style.
METHODOLOGY

Research Paradigms

There are currently four paradigms that guide and inform research. These are positivism, post-positivism, critical theory and constructivism. These four paradigms can be further narrowed down to two broad schools. The first two paradigms are termed “positivistic” and are usually associated with quantitative studies. To a positivist, reality in the world is independent of the observer. According to Bassey (1999, p. 42) “positivistic researchers do not consider themselves as significant variables in their research.” The latter two paradigms, critical theory and constructivism are considered “interpretive” and are often associated with qualitative studies. Bassey (ibid, p. 43) observes that for an interpretive researcher, reality is “a construct of the human mind.”

The ideology of the researcher, which is dependent on the human mind as well as the flux of human behavior patterns, is an important factor that affects the approach to investigating a problem. According to Denzin and Lincoln (1994, p. 3) this ideology is dependent on the researcher’s “personal history, biography, gender, social class, race and ethnicity, and those of the people in the setting.” Following these observations of Denzin and Lincoln, I will use the series of questions for assessment as set forth by Miles and Huberman (1994, pp. 277-280, see Appendix) for data analysis.

The exploratory nature of the proposed interactive one-year qualitative study offers the prospect of investigating the research problem in detail. I plan to carry out a small number of interviews (using the proposed interview protocol) and elaborate on the interview process in the following section. In this study, I will seek to interpret what may happen after examining the particular circumstances; Bassey (1999, p. 46) refers to this as idea as making a “fuzzy generalization.” In line with the comments of Bell (1993, p. 6), the primary concern of the proposed interviews is to attempt an understanding of the individuals’ perceptions of the world and “seek insight rather than statistical analysis.” Krathwohl (1998, p. 231) uses the analogy of essay question examinations to characterize the elaborate time-consuming and hands-on demands on qualitative researchers. To summarise in the words of Delamont (1992, quoted by Blaxter et al, 1996, p. 60): “Qualitative research is harder, more stressful and more time-consuming . . . doing a straightforward questionnaire study.”

Interview protocol, for use with subjects in the study

1. Have you chosen a career path?
2. When did you make your career decision?
3. What were the factors that influenced your career choice?
4. Who helped you choose your career?
5. Do you think the school has helped you make your career decision?
6. What sort of (additional) help would you like to receive?
7. Have you planned any work experience related to your career choice?
8. How do you plan to achieve your career goals?
Research Design

Initially, I plan on negotiating access to TMS for interviewing the subjects and school counselor for tapping their “thought processes” (Krathwohl, 1998, p. 286). Subsequently, I will send letters to parents to obtain their consent for participation in this study. I will clearly articulate the confidential nature of all information gathered to the participants during the proposed study.

The purpose of the interviews is to elicit from the students the reasons for their career choices and to compare these results with the literature. I am hoping to gain knowledge and understanding about the key factors through these interactions and use them to evaluate the career development program in TMS. This section details the procedures that will be used during the interview process, and the advantages and disadvantages of interviews over other survey data techniques.

The principal advantages of interviews are its flexibility, adaptability, completeness and clarity through its human interaction (Bell, 1993; Borg and Gall, 1983, p. 437). Borg and Gall (1983) observe that the greatest weaknesses of the interviews might be its subjectivity and possible bias. To reduce this bias I will include students from diverse backgrounds and try to have an equal representation of both genders when selecting the subjects from a random sample of grade eight students at TMS. The final short listed subjects will include ten students following McCracken’s (1988, p. 17) observation:

The first principle is that ‘less is more’. . . for many research projects, eight respondents will be perfectly sufficient.

To account for the subjectivity, I will clearly detail the rules that I plan on using for data analysis and made the analysis largely descriptive by using the words of the subjects. The main reasons why I plan on using interviews instead of questionnaires with the participants, is expressed in the words of Bell (1993, p. 91):

A major advantage of the interview is its adaptability. . . Questionnaire responses have to be taken at face value, but a response in an interview can be developed and clarified.

Having decided on interviews instead of questionnaires, I plan on carrying out a pilot study, using the Interview Protocol, with students of Grade 7 during one of their enrichment lessons before the end of the school year. I will also have a few of my colleagues review the schedule of eight questions. The pilot group interview with Grade 7 students and peer review will help me refine and consolidate or add to the eight questions in the Interview Protocol.

The tentative 30-minute interviews scheduled with the individual students and the school counselor will be held at the office of the school counselor in TMS to make them comfortable. I will obtain their consent for recording the interview; and attempt to make the subjects feel at ease by speaking to them briefly about career development in general and the structure of the impending interview. This will hopefully minimize the possible effects of the presence of the recorder and expect that by doing the talking first, the participants might soon become oblivious of its presence.

Furthermore, to make the study meaningful, I will explain to the students that the honesty of their responses will matter significantly and that they could articulate their perceptions without any fear of providing correct answers to the Interview Protocol. The questions that I expect to present them will merely be a form of stimulus to engage them in conversation. This way I will try to reduce any bias in the information provided by the subjects because as Measor (1985, p. 57) points out “the quality of the data is dependent on the quality of the relationships you build with
the people interviewed.” The Interview Protocol attempts to move from the specific to the general. To quote Wragg (1994, pp. 272-273)

A semi-structured interview schedule. . . allows the respondents
to express themselves at some length, but offers enough shape
to prevent aimless rambling.

Walford (2001, p. 96) recommends that interviews must be used with great care. Referring to the uncertainty about the validity of interviews, he concludes that the information provided by an interviewee might depend on whether the subject has “greater potential impact” or “no direct investment” to the interviewee and therefore the words have to be interpreted with caution. The subjects would have finished their Colorado Student Achievement Program (CSAP) examinations and already made preliminary choices of the high school where they would be continuing their studies. This might also help the subjects feel relaxed during the interviews. Nevertheless I will be wary of the Hawthorne effect (as cited by Krathwohl, 1998, p. 520) because the responses of the students could be altered due to their self-consciousness about being interviewed.

For triangulation purposes, the opinion of other stakeholders, specifically the school counselor and the alumni will be gathered through simple questionnaire studies. The alumni (Class of 1966, Class of 1981, Class of 2002) have been meeting annually at the school and will be asked to write a few lines on each of the following areas during their next annual meeting. Their:

1. Initial experiences in High School and the University,
2. Opinion on the subject choices/courses offered and the Faculty,
3. Most daunting task that they had to face before and on getting into High School or University,
4. View on what kind of predominant qualities that they think will be beneficial for students currently studying in middle school and moving into High School/University,
5. Future plans and how their High School Counselor/University Faculty have helped them make decisions.

As pointed out by Hitchcock and Hughes (1989, p. 105), ‘there are many different kinds of data and one data source cannot be used unproblematically to validate another source of data’. This is a weakness in the proposed study.

Johnson (1977, p. 320) observed that a study ‘is incomplete if it includes only what happens to the child in school.’ To reduce this weakness, the parents of the subjects in this study will also be telephonically interviewed during the course of the year at a time that will be mutually convenient. This will also help with triangulating subject responses obtained at the individual interviews. Nevertheless, the small number of subjects in the study and the inherent subjectivity that exists in the interviewing process limit the generalizability of the study.
DATA ANALYSIS

Students need to be provided better opportunities for acquiring career management skills such as communication, decision-making, problem solving, and exercising their discretion and judgment. The purpose of the proposed study is to identify the key factors that influence the career choices and goals of students at TMS. Using the data provided by students, counselor, alumni, and parents, I will try to discover and understand the rationale behind their informed choices and interdependent decisions.

I will attempt an analysis of the data in this study using the simple and rigorous methods suggested by Miles and Huberman (1994). According to Miles and Huberman (summary questions for data analysis and assessment detailed in Appendix A), the methods for analysis involve three processes: data reduction, data display and conclusion drawing and verification. For data reduction and display, I will use validated responses of the subjects to categorize the data using the Interview Protocol and construct an elaborate matrix.

Using this elaborate matrix as a framework, a second observer (maybe the school counselor or a colleague) and I will independently carry out a “squint analysis” by scanning down rows and across columns as suggested by Miles and Huberman (1994, p. 242) to observe any patterns and recurring themes. The second observer will help with achieving consistency before presenting the evidence and facilitate high interrater reliability (Krathwohl, 1998, p. 340). Subsequently, I will elaborate on the decision rules used for the “squint analysis” from our first impressions, and other coding rules for drawing up more matrices and graphical displays. This will help significantly during data analysis because as Jones (1985) remarks: “The analysis of qualitative data is a process of making sense, of finding and making a structure in the data and giving this meaning and significance” (p. 56).
REFERENCES


APPENDIX A

(Summary questions for data analysis and assessment as outlined by Miles and Huberman 1994, pp. 277-280, in the ‘critical realist’ tradition)

Standards for the Quality of Conclusions
According to Miles and Huberman, shared standards are worth striving for. The ‘goodness’ of qualitative work needs careful assessment. The five overlapping issues critical to a ‘critical realist’ are:

1. Objectivity/Confirmability of qualitative work

The basic issue here is to remain relatively neutral and free from unacknowledged researcher bias. Do the conclusions depend on ‘the subjects and conditions of the inquiry’ rather than the on the inquirer? The focus will be on external reliability, with emphasis on the replicability of the study by others.

Relevant queries. Some useful questions to be asked about this issue are:

a) Are the study’s general methods and procedures described explicitly and in detail: Do we feel that we have a complete picture, including ‘backstage’ information?
b) Can we follow the actual sequence of how data were collected, processed, condensed/transformed, and displayed for specific conclusion drawing?
c) Are the conclusions explicitly linked with exhibits of condensed/displayed data?
d) Is there a record of the study’s methods and procedure detailed enough to be followed as an ‘audit trial’?
e) Has the researcher been explicit and as self-aware as possible about personal assumptions, values and biases, affective states – and how they may have come into play during the study?
f) Are study data retained and available for reanalysis by others?

2. Reliability/Dependability/Auditability

The underlying issue here is whether the process of the study is consistent, reasonably stable over time and across researchers and methods. We can, in effect, speak of ‘quality control’. Have things been done with reasonable care?

Relevant queries. What can be usefully asked in this domain?

a) Are the research questions clear, and are the features of the study design congruent to them?
b) Is the researcher’s role and status within the site explicitly described?
c) Do findings show meaningful parallelism across data sources (informants, contexts, times)?
d) Are basic paradigms and analytic constructs clearly specified? (Reliability depends, in part, on its connections to theory.)
e) Were data collected across the full range of appropriate settings, times, respondents, and so on suggested by the research question?
f) Were data quality checks made (e.g. for bias, deceit, informant knowledgeability?)?
g) Were any forms of peer or colleague review in place?

3. Internal validity/Credibility/Authenticity

The crunch question: truth-value. Do the findings of the study make sense? Do we have an authentic portrait of what we are looking at? Here, validation becomes the issue of choosing among competing and falsifiable explanations.

Relevant queries. Some useful possibilities are:

a) How context-rich and meaningful (‘thick’) are the descriptions?
b) Does the account ‘ring true’, ‘make sense, seem convincing or plausible, and enable a ‘vicarious presence’ for the reader?’
c) Did triangulation among complementary methods and data sources produce generally converging conclusions? If not, is there a coherent explanation for this?
d) Are the presented data well linked to the categories of prior or emerging theory? Do the measures reflect the constructs in play?
e) Were the rules for confirmation of the propositions, hypotheses, and so on, made explicit? (There should be some)
f) Are areas of uncertainty identified? (There should be some)
g) Have findings been replicated in other parts of the database than the one they arose from?
h) Were the conclusions considered to be accurate by original informants? If not, is there a coherent explanation for this?
i) Were any predictions made in the study, and how accurate were they?

4. External validity/Transferability/Fittingness

Do the conclusions of a study have any larger import? Are they transferable to other contexts? Do they ‘fit’? How far can they be ‘generalized’? Schofield (1990) usefully distinguishes generalizing to ‘what is’ (other actual contexts), to ‘what may be’ (sites in the forefront of some similar process) and to ‘what could be’ (outstanding or ideal cases).

Relevant queries. Here we may usefully ask:

b) Are the characteristics of the original sample of persons, settings, processes (etc.) fully described enough to permit adequate comparisons with other samples?

c) Is the sampling theoretically diverse enough to encourage broader applicability?

d) Does the researcher define the scope and boundaries of reasonable generalization from the study?

e) Do the findings include enough ‘thick description’ for readers to assess the potential transferability, appropriateness for their own settings?

f) Are the findings congruent with, connected to, or confirmatory of prior theory?

g) Are the processes and outcomes described in conclusions generic enough to be applicable in other settings, even ones of a different nature?

h) Does the report suggest settings where the findings could fruitfully be tested further?

5. Utilization/Application/Action orientation

Evaluation and policy studies in particular are supposed to lead to more intelligent action; whether or not they do, real people’s lives are being affected, and large amounts of money are being spent (or misspent). ‘The ultimate test of the credibility of an evaluation report is the response of decision-makers and information users to that report’.

Relevant queries. What are some fruitful probes to be made here?

a) Are the findings intellectually and physically accessible to potential users? (‘A scientific report should be boring and difficult to read’)

b) Do the findings stimulate ‘working hypothesis’ on the part of the reader as guidance for future action?

c) What is the level of usable knowledge offered? It may range from consciousness-raising and the development of insight or self-understanding to broader considerations: a theory to guide action, or policy advice.

d) Do the findings have a catalyzing effect leading to specific actions?

e) Have users of findings learned, or developed new capacities?

f) Are value-based or ethical considerations raised explicitly in the report? If not, do some exist implicitly that the researcher is not attending to?
REVIEW OF THE Q PAPER

My prior research experience is limited to my Masters thesis at the University of Sheffield and more recently the research methods course at the University of Colorado at Denver. Against this background and educational training as a physicist, these are my first impressions reading Onwuegbuzie and Leech’s paper. For convenience, I will organize this critique in two parts: what I believe are the strengths and weakness of this paper.

**Strengths**

The paper provides a brief review of specific chapters in several research methods textbooks that support some of the authors’ arguments. The authors highlight some contradictions and misconceptions perpetrated by textbooks on research methods; for example their discussions on qualitative sampling designs, research method as a design versus paradigm, and sample sizes, draw attention to these problems. They appear to be subtly making a case for including and integrating more qualitative methods into research methods textbooks that have long been dominated by a bias towards quantitative methods. As a physicist, this debate reminds me of the current effort by several physicists to emphasize the importance of conceptual understanding over the traditional mathematical emphasis in physics textbooks. One reason for this bias has been the difficult of assessing the former rather than the latter. Several students have not been able to demonstrate an understanding of concepts outside the classroom although they can solve mathematical problem in physics plugging in numbers into equations.
Furthermore, the paper summarizes the seven steps in a typical research design: formulating a research problem, developing specific research questions, selecting a research method, collecting data, analyzing data, interpreting data, and communicating findings. Most importantly, the authors argue that our understanding of human behavior will be furthered when research objectives drive the researchers study rather than researchers allegiance to specific paradigms. The authors underscore the need for all researchers to understand that the words that have traditionally been used to describe qualitative and quantitative research traditions actually lie on an epistemological continuum: idealism versus realism, objective versus subjective, impersonal versus personal, deductive reasoning versus inductive reasoning, logistic versus dialectic, rationalism versus naturalism, reductionistic versus holistic, generalization versus uniqueness, causal versus acausal, macro versus micro, quantifiers versus describers, and numbers versus words. The authors articulate a need to foster an epistemological ecumenism and propose that a synthesis of research perspectives would be beneficial to all.

_Weaknesses_

The solution that the authors propose to resolve the quantitative versus qualitative divide in the social and behavioral sciences by “eliminating” these two terms and re-conceptualizing research texts by using “exploratory and confirmatory methods,” seems to be playing only with semantics and too simplistic in its approach. The authors observe that in quantitative studies the general conclusions are pattern recognition and hypotheses testing whereas in qualitative studies they are theme recognition and theme testing. These conclusion, the authors argue are best served by carrying out exploratory (theory
building) or confirmatory (theory testing) studies. In my view, semantic changes and adding more jargon such as “bi-researchers” seem to be merely making cosmetic changes to research traditions. The authors themselves observe that merely changing textbook formats alone will not help but instructors “delivery systems” need changes, and they suggest team-teaching as a possible solution. My question is if “exploratory and confirmatory methods” are indeed a solution, why continue with this dichotomy and have two instructors? The arguments presented by a coherent system must be simple enough for individual instructors to understand and articulate. Are the authors suggesting here that instructors have become so old that they need “bi-focal” lenses for their expositions on research methodology courses to young graduate students? The compatibility thesis that pragmatists embrace seems to be worth further investigation. The authors could have not only elaborated on that, but also discussed how their “exploratory and confirmatory methods” might be compatible with the ideas expressed by pragmatists.
Critique of the “Kindergarten readiness and retention: A qualitative study of teachers’ beliefs and practices” paper

This topic is very relevant, particularly in this high stakes testing era. However, several States seems to be increasingly relying on standardized tests to decide whether students will be held back or promoted. According to a recent article in the Miami Herald, a quarter of Miami-Dade county’s third graders (~7,200 students) were likely to be held back because they performed badly in the Florida Comprehensive Assessment Test. The reliance on standardized tests seem to reflect teachers’ opinion echoed in the Kindergarten study, because teachers apparently did not favor “social promotion,” that schools could adopt prior to these standardized test days. At any rate, here are some specific strengths and weaknesses of the kindergarten study.

Strengths:

- Clearly presenting the background to two distinct positions for promotion: grade-appropriate competence (academic curriculum based) vs. grade-maturation readiness (student development based)
- Articulating five distinct initial research questions to investigate teachers’ beliefs and practices.
- Distinguishing and defining teacher beliefs from knowledge – clarifying the title.
- Study commissioned by school district to find out the efficacy of the different practices embraced by schools with regard to promotion.
- Clear description of the methods used in the study: extensive 1-h interviews with teachers (44 teachers) and themes emerging after coding transcripts, participant observation (in six schools to reflect variability of retention practices), document analysis (of school policies, school readiness pamphlets for parents, district curriculum, etc. to provide information on social and educational context), semistructured interview with parents.
- Identifying the value of “interactionist-teachers,” who subscribe to the value and influence of classroom environment on student development and learning.
- Stating and discussing results in four distinct assertions and teacher beliefs: nativists, diagnostic-prescriptives, interactionists, and remediationists.
- Supporting assertions with descriptions by teachers during interviews provides the reader an opportunity to make his or her own evaluations of the assertions.
- Using different presentation methods to summarize the results of the study: elaborate descriptive matrices, and a diagrammatic display for illustrating teacher beliefs.
- Finding coherent and internally consistent individual teacher beliefs.
Weaknesses:

- Very small (less than 20%) minority representation in district, does not reflect the changing demographics.
- Well-educated and active parental involvement in educational and social issues makes it difficult to generalize to other districts.
- Participant observation and writing of case studies by graduate students and not the researchers directly.
- Does not list extensive research details about the parental interviews.
- Did not interact directly with the most important individuals in the study – the students, but cite literature from a couple of sources that carried out prior research on student perceptions.