

Using case study research as a rigorous form of inquiry

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Abstract

Aim To describe how case study research (CSR) was used inductively as an all-encompassing theoretical framework to examine learning in the workplace.

Background Case study research is a method with strong philosophical underpinnings which provides a framework for exploratory research in real-life settings (Yin 2009).

Data sources A study of five students' experiences of learning in healthcare environments to explore real-life contexts over the course of two years. The study was rich with empirical data, offering a pragmatic framework for learning in the workplace.

Review methods Observations, interviews and documents were used.

Discussion As a result of using CSR, the findings were analysed systematically and rigorously. Using multiple methods verified data and strengthened the significance of the findings.

Conclusions This paper focuses on the strengths of using the CSR methodology. CSR embraces qualitative research methods in a rigorous and systematic manner. CSR has been applied to one example of research, addressing each step of the research protocol to use CSR to its full potential.

Implications for practice/research CSR enables real-life settings to be studied systematically and rigorously, offering examples of practice in nursing and education.

Keywords Qualitative research, case study research, workplace learning, students

Introduction

THIS PAPER seeks to demonstrate how case study research (CSR) was used for rigorous enquiry in a study of work placements used by further education (FE) students on a health studies programme in the UK. These students use similar placements to higher education (HE) students on pre-registration nursing programmes in the UK.

Consequently, the study offered insight into the student experience, transition from a FE to HE, and the workplace as a learning environment.

A central tenet of this work was in linking nursing practice with nursing education. Students embarking on vocational programmes will experience half their learning in an educational institution, half in the workplace. From the perspective of education in the UK, there are areas of concern in education and workplace partnerships, which are further exacerbated by austerity measures

affecting many healthcare environments and the personnel who work there.

Case study research

Despite its widespread use, CSR has changed over time and it varies between disciplines and individual researchers (Burton 2000, Denzin and Lincoln 2000, Yin 2003, Creswell 2009). Historically, CSR was marked by periods of intense use and periods of disuse. In nursing, its use peaked in the 1960s, followed by rapid decline (Burns and Groves 1997).

Some modern examples from nursing research exist, such as Newton *et al's* (2009) study of six students in an Australian nursing cohort, while in FE, Colley *et al* (2003) and Hodkinson and James (2003) explored the complexities of learning through collaborative partnerships between four universities and four FE colleges in the UK. They followed

programmes in childcare, health care, electronics and telecommunications that involved sites with substantial amounts of work-based learning.

More recently, Houghton *et al*'s (2013) research explored using several case studies of the education of nursing students in the clinical skills laboratory.

Historically, quantitative researchers have argued that CSR is anecdotal and unscientific, dismissing the results and findings obtained by this method as lacking validity and reliability (Al Rubaie 2002). According to Burton (2000) and Gerring (2007), CSR is held in low regard or simply ignored.

The controversy that surrounds the scientific nature of CSR is nothing new. Like others, Al Rubaie (2002) argued that CSR is a completely legitimate research method suited to qualitative and quantitative research, and suggested it is well suited to a holistic, democratic discipline dealing with the understanding and change of interwoven complexities associated with interpersonal processes that emerge in a wider social context.

Definition

Defining CSR remains problematic because a case study can constitute a design and research method. The terms 'case study', 'case study method' and 'case method' appear to be used interchangeably in the literature (Hamel *et al* 1993, Yin 2009). However, it is clear that CSR focuses on specific situations, providing a description of individual or multiple cases. In using this design, the researcher can investigate 'everything' in that situation, be it individuals, groups, activities or a specific phenomenon.

A distinguishing feature of CSR is that although the number of cases may be small, or even one, the number of variables involved is large (Burns and Groves 1997, Yin 2009). Use of the term CSR to describe a study might mean: its method is qualitative, with small numbers of participants; it is ethnographic, clinical, involves observation of participants or is otherwise 'in the field' (Yin 2009); the steps involved can readily be followed (George and Bennett 2005); and it can investigate a single case or single phenomenon.

Walsh *et al* (2000) defined CSR as a 'systematic investigation of a unit of analysis that is conducted over a period of time where in-depth data is obtained'. This definition underpins the research, particularly stressing the 'systematic' approach taken.

Yin's (2003) prominent work on CSR is defined as 'an empirical inquiry that investigates contemporary phenomena within its real-life context, especially when the boundaries between phenomena and context are not clearly evident'. Yin (2009) argued

that one of the most powerful uses of the method is to explain real-life, causal links, with the researcher able to appreciate the subjective richness of individuals recounting their experiences in a particular context.

Gomm *et al* (2000) identified three advantages of conducting CSR. Case studies:

- Can take us to places where most of us would not have access or the opportunity to go. They provide enriched experiences of unique situations.
- Allow us to look through the eyes of the researcher. Glesne and Peshkin (1992) recommended that researchers should be as 'unobtrusive as the wallpaper'. In this instance, a poignant piece of reflection from the study comes to mind: 'During the observations, I recall the feeling of being "pinned to the corridor wall" just observing the "goings on", sitting on a stool. The feeling of sinking back into the wall was the ultimate experience of being an observer.'
- May be less likely to produce defensiveness and resistance to learning in the reader. Through the researcher's eyes, we share the researcher's perspective of the theoretical position in the study. CSR is a more acceptable approach with practical applicability than perhaps some of the much deeper philosophical approaches because the research reflects real life.

All these issues bring together what CSR is. Hakim (1987) summed up how focused this method is: 'It is the social research equivalent of the spotlight or the microscope.' In the study described in this paper, the spotlight (or unit of analysis) is on a group of five learners participating in a two-year study programme in which the completion of work placements is compulsory.

Unit of analysis

CSR is a 'systematic inquiry into an event or set of related events which aims to describe and explain the phenomenon of interest' (Bromley 1990). The unit of analysis can vary from an individual to a group. While it has been applied as a method retrospectively, it is most commonly used prospectively, as in this study.

The goal of CSR is to create as accurate and as complete as possible a description of the case. In this study, the unit of analysis was students on a health studies programme. The phenomena under investigation are embedded in everyday, real-life healthcare practice. In using CSR, how students engage in learning in the workplace was explored.

The phenomena of learning and the nature of the workplace can be difficult to understand. CSR 'copes with the technically distinctive situation in which there will be many more variables than data points'

(Yin 2009). The unpredictable nature of health care presents numerous consequential variables. Every day is different and the learning environment can be so volatile that even the next working shift can be different. It typically becomes a system of 'actions' rather than an individual or group of individuals.

Case studies can have multiple perspectives and tend to focus on one or two issues that are fundamental to understanding the system being examined (Jones and Lyons 2004). This means that the researcher considers not just the voice and perspective of the participants, or the relevant groups of participants and the interaction between them, but also the context in which this happens. The crux of this piece of research was the context in which learning occurs. Not only were the perspective of the students and the interaction between them illuminated, but also the context in which this happens.

Study example

To understand the methodology, some contextual information about the study is provided here and some examples are given to illustrate the strengths of the method. The primary focus of the study was to explore how students learn in healthcare settings. Five students were recruited from a health studies programme based in an FE college. They were between 16 and 18 years old, with little or no experience of the healthcare environment. There was a paucity of research investigating such learners and the researcher had been involved in previous research into pre-registration and post-registration nursing students, but not pre-healthcare or pre-nursing learners. The question of whether work placements have an effect on the recruitment of healthcare workers was therefore a new area for investigation.

Ethical permission was sought from hospitals, nurseries and nursing homes, as well as the respective local research ethics committees. Students consented and participated with no extra work or demands placed on them. All students had work placements throughout the two-year programme. Data were collected through interviews, observations and documentation – student journal, programme curricula and placement information – over the two-year period and constant comparative analysis used to find emerging categories.

Through CSR, the realities for students were examined and analysed to reveal a number of categories: physical environment, interactive communication, self-awareness, tasks, feelings and learning. The subcategories are listed in Table 1, page 22.

The study identified the learning environment as a complex entity comprising six inter-related

components; when CSR was applied to healthcare workplaces, the complexity and chaos of such environments were revealed. No one environment is constant, time is transient, and how the learner willingly engages with these elements over time is the crux of learning.

Building the case study

Each stage of this CSR follows in sequence and leads directly to the next, unfolding and revealing how these students learn in the workplace. Eisenhardt (1989) described this process of inducting theory in CSR and argued that while some features, such as the definition of the problem and validation of the construct, are similar to research that tests hypotheses, others are unique to the inductive, case-oriented process, such as within-case analysis like those in this study.

Eisenhardt (1989) described the process as 'highly iterative and tightly linked to the data', which is illustrated in the dataset grid in Figure 1, page 23. Consequently, it was useful for investigating new areas, which Yin (2009) described as 'explanation-building'. The overlapping of data collection and analysis not only assists the process but gives the researcher some flexibility to make adjustments in data collection or in the tools, or to take opportune moments if the situations present themselves. Such alterations are legitimate in research that builds theory, because researchers are trying to understand each case in depth.

The gradual building of an explanation is similar to the refining of a set of ideas. Thus if a new line of thinking emerges, it makes sense to take advantage of it, for example, in the case of deep observations. Nevertheless, this flexibility is by no means a licence to become unsystematic. The researcher must remain transparent to maintain rigour. As such, Yin (2009) suggested a number of safeguards, including storing the entire array of data, logging where and when it was collected, and having it available for inspection. The dataset grid in Figure 1 does this and following this chain of evidence became inherent in building the explanations.

The practice of building theory in CSR is begun as close as possible to the ideal of no theory. An attempt is made to approach this 'ideal' because preconceived ideas of theories and propositions may bias and limit the findings. Thus it is important when identifying the research's problem to specify important variables and to make the problem clear from the beginning. Thereafter, researchers should avoid thinking about the problem, putting it to one side so the research can begin. Table 2 shows each stage of the research, the activity and the reason why it occurred.

Table 1 Categories identified in the learning environment

1 PHYSICAL ENVIRONMENT	2 INTERACTIVE COMMUNICATION	3 SELF-AWARENESS	4 TASKS	5 FEELINGS	6 LEARNING
Organisation	Communication skills (verbal/non-verbal) Teamwork Engaging with clients	Knowing own limits	Routine	Nervousness	Opportunistic
All purpose/versatile rooms		Lack of knowledge	Repetitive nature	Anxiety	From experience
Staff levels/shortage		Links between theory and practice	Responsibility	Confidence	Through observation
Security		Lack of experience	Ownership	Anger	On the job/ participation
Pace of work		Looking to improve/ preparedness	Pace	Being accepted	Shadowing staff
Time		Researching conditions	Time	Reflection	New skills
Skill mix		Insight into nurse's job	Taking pride	Concern about own performance	Supervision
Noise				Not being appreciated	Mentor
Light					Supervised learning
Smell					
Uniforms					
Décor					
Induction/orientation					

Rigour

Analysing within-case data is the heart of building theory from case studies, but it can be the most difficult part. Within-case analysis typically involves immersing oneself in the data, detailing each case, and becoming intimately familiar with each case, each incident and each observation made - becoming one with the data. This enables the unique patterns of each case to appear to the researcher before patterns are merged across cases. Immersing oneself with the data in this way assists cross-case comparison by enabling the data to be looked at in many different ways.

One way to do this is to look at categories or repeated themes and then look for similarities or differences among the cases. A tactic used in this study was moving across cases and down methods in a grid. Another tactic Eisenhardt (1989) suggested is to select pairs of cases and list subtle similarities and differences. Alternatively, data can be divided between researchers, with one dealing with interviews and another dealing with observations.

In this research, each method was dealt with in sequence using the dataset grid (Figure 1). When a pattern did emerge and was corroborated by evidence from another method, the findings became more valid and better grounded.

After this deep repetitive process, theory and data must be systematically compared. This is to sharpen constructs and refine definitions. In using multiple sources of evidence to define and distinguish other constructs, the aim of the researcher is to ultimately achieve construct validity. Before reaching closure of the research or theoretical saturation, a feature of building theory is to make comparisons between existing literature and the emerging themes, patterns and concepts, looking for similarities and contradictions. In this, it is important to delve into a broad range of material and examine the literature to gain deeper insight into the resultant theory and/or conflicting theory. This work can result in a theory with stronger internal validity, sharper generalisability and a higher conceptual level.

Figure 1 Fieldwork grid

N = 5	Placement 1			Placement 2			Placement 3		
	1hr ob S1P1Ob1	4x CIAs (INT) Nursery ü✓ S1P1CIA ü✓ S1P1Diary ü✓ info	1hr ob ü✓ S1P1Ob2	1hr ob ü✓ S1P2Ob1	4x CIAs (INT) Nursing Home ü✓ S1P2CIA ü✓ S1P2Diary ü✓ info	1hr ob ü✓ S1P2Ob2	1hr ob ü✓ S1P3Ob1	4x CIAs (INT) H – Mixed medical /surgical ward ü✓ S1P3CIA üX diary üX info n/a	1hr ob ü✓ S1P3Ob2
Student 1	1hr ob ü✓ S2P1Ob1	4x CIAs (INT) Nursery ü✓ S2P1CIA ü✓ S2P1Diary ü✓ info	1hr ob ü✓ S2P1Ob2	1hr ob ü✓ S2P2Ob1	4x CIAs (INT) Learning Difficulties ü✓ S2P2CIA ü✓ S2P2Diary ü✓ info	1hr ob ü✓ S2P2Ob2	1hr ob ü✓ S2P3Ob1	4x CIAs (INT) H – Orthopaedics Ward ü✓ S2P3CIA ü✓ S2P3Diary ü✓ info	1hr ob ü✓ S2P3Ob2
Student 2	1hr ob ü✓ S3P1Ob1	4x CIAs (INT) Nursery ü✓ S3P1CIA ü✓ S3P1Diary ü✓ info	1hr ob ü✓ S3P1Ob2	1hr ob ü✓ S3P2Ob1	4x CIAs (INT) Nursing Home ü✓ S3P2CIA üX diary ü✓ info	1hr ob ü✓ S3P2Ob2	1hr ob ü✓ S3P3Ob1	4x CIAs (INT) H – medical ward ü✓ S3P3CIA üX diary ü✓ info	1hr ob ü✓ S3P3Ob2
Student 3	1hr ob ü✓ S4P1Ob1	4x CIAs (INT) Nursery ü✓ S4P1CIA ü✓ S4P1Diary ü✓ info	1hr ob ü✓ S4P1Ob2	1hr ob ü✓ S4P2Ob1	4x CIAs (INT) Nursing Home ü✓ S4P2CIA ü✓ S4P2Diary ü✓ info	1hr ob ü✓ S4P2Ob2	1hr ob ü✓ S4P3Ob1	4x CIAs (INT) H – medical ward ü✓ S4P3CIA üX diary ü✓ info	1hr ob ü✓ S4P3Ob2
Student 4	1hr ob ü✓ S5P1Ob1	4x CIAs (INT) Nursery ü✓ S5P1CIA ü✓ S5P1Diary ü✓ info	1hr ob ü✓ S5P1Ob2	1hr ob ü✓ S5P2Ob1	4x CIAs (INT) EMU Unit for dementia ü✓ S5P2CIA üX diary ü✓ info	1hr ob ü✓ S5P2Ob2	1hr ob ü✓ S5P3Ob1	4x CIAs (INT) H – Surgical ward ü✓ S5P3CIA üX diary ü✓ info	1hr ob ü✓ S5P3Ob2

30 hours of Observations (ob) plus some long observation pieces

Interviews (INT) CIAs (5 students x 3 sites) = 15 X 4 CIAs = 60

Documents – diaries (9/15), placement info (14/15) and course documents ✓

Box 1 Case study protocol

- 1 Overview of the project (project objectives and case study issues).
- 2 Field procedures (credentials and access to sites).
- 3 Questions (specific questions that the investigator must keep in mind during data collection).
- 4 Guide for the report (outline, format for the narrative).

Yin (2009)

Box 2 Desired skills for the case study investigator

- 1 A good case study investigator should be able to ask good questions and interpret the answers.
- 2 An investigator should be a good listener and not be trapped by his or her own ideologies or preconceptions.
- 3 An investigator should be adaptive and flexible, so that a newly encountered situation can be seen as an opportunity, not a threat.
- 4 A person should be unbiased by preconceived notions, including those derived from theory. Thus a person should be sensitive and responsive to contradictory evidence.

Yin (2009)

in the field, they are in turn implicit in terms of the trustworthiness of the data.'

Discussion

Qualitative research is descriptive rather than explanatory, and exploratory rather than testing. It is subjective in nature, so everything must be transparent and made explicit. It is a powerful approach that can open new areas and stimulate further research on a larger scale. It is carried out to understand specific phenomena. It follows a research strategy and reveals rich and vivid descriptions.

This research study immersed itself in different workplaces and explored real-life contexts in which learning took place. It strived to reach high standards of truth and credibility to achieve completeness in the data.

It is particularly important to demonstrate that the research approach taken is credible and rigorous. Traditional criteria of internal and external validity

are replaced by trustworthiness in CSR (Denzin and Lincoln 2000). Rigour or trustworthiness is the means of demonstrating the plausibility, credibility and integrity of qualitative research (Moule and Goodman 2009). Implicit in the process is abiding by the research protocol, following the same steps in each learning environment and carrying out the methods in the same fashion. Stating all parameters for the research area and 'being true to the data' gives validity to the work (Jasper 1994).

The researcher's aim was to provide a description of the phenomena that accurately portrayed the whole experience. The data must be credible, just as quantitative research must be valid. It must be presented as a 'true' representation of the data, the participants' views and their experiences. This consists of four aspects of trustworthiness: credibility, dependability, conformability and transferability (Lincoln and Guba 1985); the four aspects are relevant for qualitative research studies to be authentic, reliable and transparent.

The study was carried out over a long timeframe and while the sample may be perceived to be small, the intensity of the data collection was strong, with a large number of variables and significant amount of data. Some would argue that it is impossible to be free of bias (Oiler 1982). By having a good relationship with the participants and learning environments, the researcher is likely to elicit an honest account (Appleton 1995). Alternatively, critics of this approach may suggest participants might want to 'please' the researcher, thereby introducing bias to the research (Gerrish and Lacey 2010).

CSR is known as a 'triangulated' research strategy (Feagin *et al* 1991). Denzin (1989) defined triangulation as 'the combination of methodologies in the study of the same phenomenon' - it is the combination of at least two or more theoretical perspectives, methodological approaches, data sources, investigators or data analysis methods. Denzin (1989) outlined three outcomes of triangulation: convergence, inconsistency and contradiction. Whichever of these outcomes prevail, the researcher can construct good explanations of the observed social phenomena.

Triangulation decreases, negates or counterbalances the deficiencies of a single strategy, thereby increasing the scope for interpreting the findings. Redfern and Norman (1994) suggested it overcomes the bias of 'single-method, single-observer, single-theory studies', increases confidence in the results, allows development and validation of instruments and methods (conformability), provides an understanding of the domain (completeness), is

ideal for complex social issues, overcomes the elite bias of naturalistic research, overcomes the holistic fallacy of naturalistic research, and allows divergent results to enrich explanation. The two goals of triangulation – confirmation and completeness of data – are the major strengths of this approach.

Begley (1996) argued that it is important that researchers are clear why they are choosing triangulation as a method and that they should provide evidence of how it is used. In this case, as is the tradition in CSR, multiple data collection tools were used (Yin 2009) – observations, interviews and documentation were collated in a dataset grid.

Miles and Huberman (1994) spoke of triangulation as a state of mind: 'If you self-consciously set out to collect and double-check findings, using multiple sources and modes of evidence, the verification process will largely be built into the data-gathering process, and little more need be done than to report on one's procedures.'

Conclusion

This paper has highlighted a study that brought together educational and practice issues related to student learning in the workplace. By using CSR, the study opened up a new dimension of learning in the workplace and learning was viewed from a number of different perspectives. Furthermore, the study brought CSR to the forefront of nursing research that can be used to improve practice and education in a systematic way.

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Conflict of interest
None declared

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