# Incorporating Design Science Research and Critical Research Into an Introductory Business Research Methods Course

**John Venable**
**Curtin University of Technology, Perth, Western Australia, Australia**
j.venable@curtin.edu.au

**Abstract:** Research in business can address a variety of goals, including explanation or evaluation of extant business practices, development of *new* business practices, critiquing business practice, and examining business goals other than profit. Empirical research about extant business practices is conducted in one or both of the positivist and interpretive research paradigms. Development of *new* business practices, rather than simply examining *existing* ones, is conducted by research within the Design Science Research (DSR) paradigm. The DSR paradigm emphasises the invention, design, and development of new technologies, techniques, and methods, yet still achieving research rigour. Critically examining organisational practices and goals other than profit, such as business ethics, sustainability, and the triple bottom line, is much better conducted within the Critical Research (CR) paradigm, which critically examines the purpose, goals, and social and societal impacts of business and other practices. Unfortunately, the Introduction to Business Research Methods courses and textbooks that develop the business research community's fledgling members' ability to conduct, interpret, and critique and develop high quality research typically place heavy if not exclusive emphasis on positivist and interpretive research paradigms and methods at the expense of other research paradigms and methods. Such exclusive emphasis on positivist and interpretive research at the expense of other paradigms handicaps new researchers and severely limits their future ability to conduct, interpret, critique, and develop high quality research. To address this problem, this paper describes how DSR and CR have been successfully incorporated within an introductory business research methods course, which introduces students, regardless of their specific business discipline, to business research. The paper describes how it (1) deals with textbooks that have a limited perspective on business research paradigms and methods and (2) provides a needed, holistic perspective on business research, regardless of the specific discipline. To accomplish the above, the new course does four specific things. First, it situates business research as an applied discipline, along with other applied disciplines, such as medicine and engineering, and in contrast to non-applied disciplines, such as physics or psychology. Second, it includes a key new framework that contrasts the assumptions and perspectives of different research paradigms, including business research knowledge goals, the role of values in research, and epistemological issues. Third, it modifies and extends frameworks and figures from a popular business research methods textbook to supplement the limited perspective of the textbook with alternative research goals and paradigms. Fourth, the new course adds relevant introductory readings. The paper presents these extensions to the course, including how and where they are included within the course presentation, materials, and assessments, as a model for others wishing to enhance their introductory business research methods courses.

**Keywords:** business research, research methods, design science research, critical research, curriculum design, teaching

## 1. Introduction

University courses teaching research methods are a key element in the development of a research community through developing its fledgling members' ability to conduct, interpret, critique and develop high quality research. In today's business research environment, a diverse range of research paradigms are available and used by researchers; these need to be understood and familiar to business researchers today. New members of the research community typically receive their initial grounding in an introductory research methods course. Such a course should cover the broad range of methods used for business research. Otherwise, fledgling members of our community would be significantly handicapped by not understanding the role or even the existence of other research paradigms or how they contribute to the improvement of business and our understanding of it.

Unfortunately, the introductory Business Research Methods courses taught at many universities and the textbook they use usually place heavy if not exclusive emphasis on positivist and interpretive research paradigms and methods. They typically emphasise quantitative and qualitative empirical research techniques for research to identify, describe, explain or evaluate existing business practices. However, research in applied disciplines, such as those in business (accounting, finance, marketing, etc.), has other relevant goals besides explanation or evaluation of extant phenomena. Such other goals are more adequately addressed by research paradigms other than (or in addition to) positivism and interpretivism as described below.


Reference this paper as: Venable, J. "Incorporating Design Science Research and Critical Research Into an Introductory Business Research Methods Course" *The Electronic Journal of Business Research Methods* Volume 9 Issue 2 2011 (pp 119-129), available online at www.ejbrm.com

Another important goal of business research is the invention and development of *new* business practices, rather than simply examining *existing* ones. Such research is better supported by the Design Science Research (DSR) paradigm (Hevner et al, 2004; March & Smith, 1995), which has recently received extensive attention in the Information Systems (IS) discipline. The DSR paradigm emphasises the invention, design, and development of new technologies, techniques, and methods, yet still achieving research rigour. Venable (2010) has suggested that all business research disciplines could benefit from considering the DSR paradigm and the discussions about it in the IS discipline, particularly developments re. DSR methods, design theory, and DSR standards. Van Aken (2004, 2005, 2007) in particular has advocated its relevance to the Management discipline.

Still another important goal of (some areas of) business research is to examine goals of businesses (and other organisations) other than profit. Many organisations that benefit from business research are not businesses, but are government or not-for-profit organisations. Furthermore, many researchers within business are concerned with the relationship of business organisations to local communities and society. Other goals, such as those incorporated into the triple bottom line (i.e. achievement of social and environmental good), are also very relevant. Understanding how existing business practices impact upon people and communities, or development of new business practices as above that improve upon that impact, is much better supported by the Critical Research (CR) paradigm (Cecez-Kecmanovic et al, 2008; Stahl, 2008b; Myers and Klein, 2011).

An Introduction to Business Research Methods course would benefit significantly from incorporating the DSR and CR research paradigms into the course, in such a way that new business research students can get a more holistic perspective and see a broader range of legitimate research perspectives.

While Critical Research and Design Science Research both have a rich literature, no research has discussed how they can be taught or included in the introductory research methods curriculum. This paper motivates and addresses that gap, with a new framework and practical methods and suggestions. Unfortunately, space limitations prevent a full introduction to CR and DSR; those unfamiliar are referred to the papers cited in the brief introductions included below.

This paper describes how DSR and CR have been successfully incorporated within a new research methods course at Curtin University of Technology in the hope that others may find the ideas useful for teaching their introductory research methods courses. The new course at Curtin introduces students to business research, regardless of their specific discipline. The cross-disciplinary course arose out of the desire to rationalise the different offerings of research methods units by six different discipline-based schools within the Curtin Business School – Accounting, Business Law, Economics & Finance, IS, Management, and Marketing – as well as the Curtin Graduate School of Business, which offers the MBA. The curriculum reported in this paper was developed and taught by the author to a cohort of students who were primarily studying Information Systems or Logistics and Supply Chain Management, but also included students from Accounting, Management, and Marketing. I hypothesise that the approach would also be useful in introductory courses specific to research in individual business disciplines although this has not been researched.

This paper describes how the new course (1) overcomes the limited perspective on business research paradigms and methods typical in textbooks and (2) provides a needed, holistic perspective on business research, regardless of the specific discipline. To achieve these goals, the new course includes four new pedagogical (or more accurately 'andrological' for adult learners) elements.

- The new course situates business research as an applied discipline, along with other applied disciplines, such as medicine and engineering, and in contrast to non-applied disciplines, such as physics or psychology.
- It includes a key new framework that contrasts the assumptions and perspectives of different research paradigms, including business research knowledge goals, the role of values in research, and epistemological issues.
- It modifies and extends frameworks and figures found within a popular business research methods textbook to supplement the limited perspective of the textbook with alternative research goals and paradigms.
- The new course adds relevant introductory readings.

 

The paper presents these extensions to the course, including how and where they are included within the course presentation, materials, and assessments. Each of these four course enhancements is discussed in turn in sections two through five. Section six then summarises the course and the experience of the students from student evaluations of the course.

## 2. Understanding business as an applied discipline

Business is an applied field, in that researchers working in its various sub-disciplines are (often) concerned with helping to improve how business is conducted and to provide guidance to practitioners on how to do what they do to achieve certain goals. For example, the results of marketing research should help guide marketers in how to conduct more effective or less costly marketing. In these regards, business is similar to other applied fields, such as medicine and engineering, which ultimately provide guidance to doctors and engineers on how to better diagnose and treat patients or better engineer new artefacts.

While it is useful to study what business practitioners and organisations actually do, as well as how effective what they do is for achieving business goals (typically using positivist or interpretive empirical research approaches and methods), such research is not the only potential topic for business research.

Importantly, the methods, approaches, tools, techniques, practices, procedures, and technologies (we'll call them collectively *technologies* here in the sense of the Greek root *techne*), which are used to do what businesses and practitioners do, need to come from somewhere, otherwise there is little or no progress. The creation, invention, and development of such new technologies and practices is itself a legitimate topic of research. It is not reasonable to rely on business practitioners to invent (all) new technologies and practices.

The new course communicates this perspective that business is an applied discipline and therefore similar to other applied disciplines such as medicine to students early in the new Introduction to Business Research course. Of course there are several ways in which this can be done.

One way is through simply lecturing and presenting an overall perspective of classification of different research types (e.g. contrasting basic and applied research). This can be backed up with literature on the topic, such as Herbert Simon's idea of a Science of Design in his seminal *The Sciences of the Artificial* (1996) and the idea of a Practical Science in Strasser (1985). This can be supplemented with key papers that adopt the Design Science Research paradigm, such as March and Smith (1995) or Hevner et al (2004) from the IS discipline, which build on Simon (1996).

However, another, more memorable way is to conduct a Socratic discussion that elicits and analyses the analogy by asking the students questions that lead the students to formulate the perspective for themselves. One can start with basic questions such as "What is the purpose of business research?" or "Why do we conduct business research?" as well as "Who are the beneficiaries (stakeholders) of business research?" Alternatively (or additionally), one can explicitly ask how business is similar to medicine or engineering by asking what business practitioners actually do and what doctors (e.g.) actually do and in what ways they are similar. One can also ask what technologies and practices business people and doctors use and then follow up by asking where those technologies and practices come from, as well as how we know whether they work (well) or not. Similarly, one can also ask how specific basic disciplines, such as physics or psychology, are different from applied (but related) disciplines, such as engineering or psychiatry respectively. All of these questions force the students to think for themselves about what the goals of business research are, why they are appropriate, and what implications they have for what we do in business research.

Following on from this, we should consider the implication that all applied disciplines may be considered from a critical perspective. If practitioners are trying to achieve goals, we need to ask several key questions: "Whose goals?", "Are those goals appropriate and just?", "What happens to those who are not the intended beneficiaries of those goals?", and "What ethical constraints should there be on practice in this discipline?". These are also appropriate questions for research, regardless of what applied discipline we may consider. They are well established in medicine, with debate on them well developed and ongoing as new technologies arise. For such questions a critical research paradigm is appropriate.

As above, these critical issues can be developed through lecturing and providing a classification and framework (see next section) that highlights the different paradigms and methods, or can be motivated through Socratic discussion in which students identify the issues themselves. Asking and discussing questions such as "Whose interests are (or should be) served by business?" and "Whose interests are (or should be) served by business research?" can lead to key issues from a critical perspective and the need for a critical perspective in research. Of course assigning selected readings on the area (e.g. Stahl (2008b), Cecez-Kecmanovic et al (2008), or Myers and Klein (2011)) and discussing them can also be fruitful.

In practice, both a structured presentation and a Socratic discussion are used in the Introduction to Research Methods course and mutually reinforce the student's understanding and retention.

## 3. A framework of research paradigms

If we take an approach of providing conceptual scaffolding for understanding the possible choices of research paradigms and methods, we need a way of conceptually organising that clarifies the issues for students. There is already extensive material that contrasts positivist and interpretive research paradigms in terms of their ontological and epistemological assumptions, as well as the kinds of questions that they are most suited to answering. However, bringing critical research and design science research into the picture is more complicated. Furthermore, in our experience, it is also complex and confronting for students to understand. To address these issues, the author developed a framework (see Figures 1-7 below) to support understanding how different research paradigms. The framework is presented to the students early in the course to help them to conceptualise later parts of the course.

The framework shown in Figure 1 can be used to classify either individual research projects or whole research paradigms according to its three dimensions. The first dimension (shown on the left side) is whether the paradigm is *empirical* or *non-empirical* (or both). The second dimension (shown on the right side) concerns whether the research is *descriptive*, *evaluative*, or *normative*. Descriptive research might be making a classification or developing a theory that is purely factual in nature. Evaluative research would place a value on something or possibly compare whether one thing is better or more effective than another at achieving some goal. Normative research concerns what should be done or whether something is the best for achieving some goal (i.e. state of the art). For purposes of the framework, evaluative research and normative research are equivalent. Finally, the third dimension (shown on the top) concerns the position taken by the researcher with respect to values. The first position, *value naïve*, (the left-most one) assumes that values are irrelevant to research and should be ignored. This is termed value naïve because it is naïvely borrowed from the physical sciences and ignores issues of goals, who has them, and their relevance to applied research. The second position, value aware, acknowledges that values are relevant to research concerning people and goals, but attempts to take a 'neutral' position about them and minimise their influence. The third position, *value critical*, is one in which the researcher explicitly takes a value position on what is right and moral and what is wrong and immoral. It further examines the motives of research and whose interests are served by the research and the goals to be fulfilled by the research. Generally, it takes a value position of equality, justice, freedom, and self direction, without undue exercise of control by those in power.

<table>
<tr><th></th><th>Value Naïve</th><th>Value Aware</th><th>Value Critical</th><th></th></tr>
<tr><td rowspan="2">Empirical</td><td></td><td></td><td></td><td>Descriptive</td></tr>
<tr><td></td><td></td><td></td><td rowspan="2">Evaluative or Normative</td></tr>
<tr><td rowspan="2">Non-Empirical</td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td>Descriptive</td></tr>
</table>

**Figure 1:** A framework for characterising and comparing research projects and paradigms

 

These three dimensions are combined into a matrix with 2 x 2 x 3 = 12 cells, one for each combination of the three dimensions. Onto this matrix, five research paradigms, including interpretive, positivist, theoretical-argumentative, critical, and design science, are placed. It is possible to position all the paradigms on the same the figure, but the paradigms overlap and this can be confusing. When taught, animations of the following figures are used.

Interpretive and positivist research and their differences are well covered in the research literature and not presented further here. From the perspective of the framework, as shown in figure 2, they are identical, always being empirical, but being applied in any of descriptive, evaluative, or normative fashions and from value positions that are value naïve, value aware, or value critical.

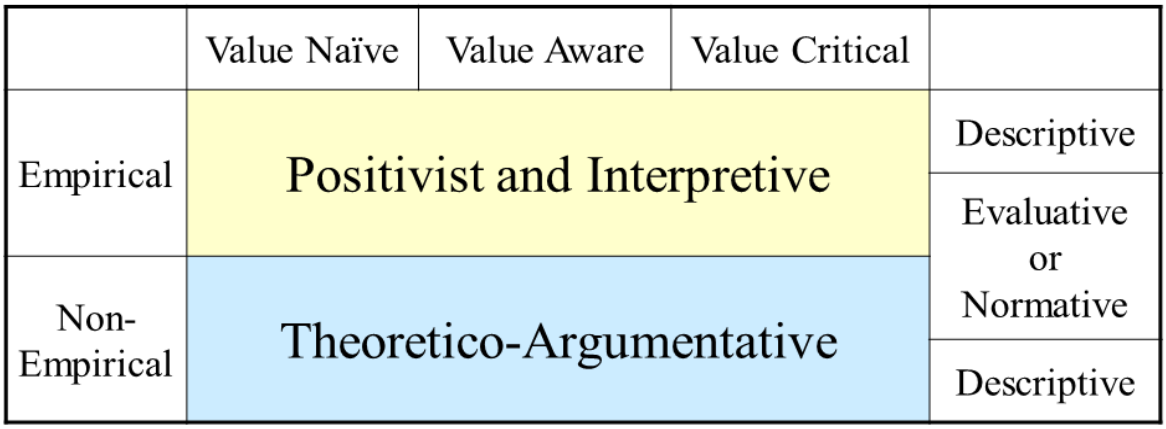


**Figure 2:** Positivist, interpretive, and theoretico-argumentative research paradigms in the framework

Theoretical-Argumentative research (also shown on figure 2) is research that makes a reasoned argument, typically using a deductive approach. It is strictly non-empirical, because it does not collect or analyse data, but works instead from concepts or possibly 'common knowledge'. This is the approach typically used in philosophy. The result is sometimes called a 'research essay'.

Design Science Research (DSR, see figure 3) invents and develops new technologies (including practice, methods, etc. as discussed above) and should include an evaluation activity to verify or provide evidence that the new technological artefact achieves its purpose, possibly that it achieves its purpose better than other extant artefacts. Such research always starts from a value position consistent with a goal that is held by one or more stakeholders, although the value position may be ignored or implicit (i.e. value naïve) or not reflected upon and treated uncritically (i.e. value aware, but not value critical).

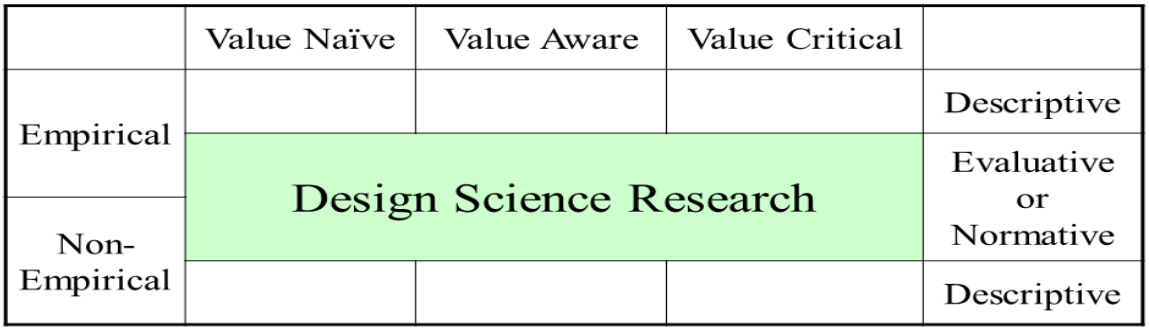


**Figure 3:** The design science research paradigm in the framework

The technology development (or solution technology invention (Venable, 2006a)) part of DSR s inherently conceptual and non-empirical, as shown in figure 4. Formulating designs and making decisions about how to achieve the goals is a conceptual reasoning activity. The design researcher uses abductive reasoning (Vaishnavi and Kuechler, 2004) to link design elements to goals by hypothesising a relationship based on similar or analogous artefacts' relationships with similar or analogous goals. Reasoning continues by deductively fleshing out the details (components and how they can fit together) of the artefacts, often with other cycles of abductive reasoning and design to revisit the high level goal or to address more detailed design goals at lower levels of granularity in the

artefact(s) designed. The output is a detailed design together with a design theory hypothesising the effectiveness of the artefact(s) to achieve the goal(s). Output may also include a realisation (or 'instantiation' (March and Smith, 1995, Hevner et al., 2004) of the design that can be used for evaluation.

<table>
<tr><td></td><td>Value Naïve</td><td>Value Aware</td><td>Value Critical</td><td></td></tr>
<tr><td rowspan="2">Empirical</td><td></td><td></td><td></td><td>Descriptive</td></tr>
<tr><td></td><td></td><td></td><td rowspan="3">Evaluative or Normative</td></tr>
<tr><td rowspan="2">Non-Empirical</td><td colspan="3">Solution Technology Invention</td></tr>
<tr><td></td><td></td><td></td><td>Descriptive</td></tr>
</table>

**Figure 4:** The solution technology invention part of design science research in the framework

Following (and possibly also during design) evaluation should be done to provide evidence of the effectiveness or efficacy of the new technology in addressing its purpose. Evaluation may be either empirical or non-empirical, but is always evaluative or normative, never descriptive. As distinguished in Venable (2006a, b), evaluation can be either artificial or naturalistic. Artificial evaluation can be either empirical (e.g. with a lab experiment) or non-empirical (e.g. with a mathematical proof or a simulation), as shown in figure 5. Naturalistic evaluation is evaluation in real use, i.e. with real users using a real technology to do a real task. To the extent that the technology is a toy prototype, the users aren't the real users (e.g. they're students or the technology developers) or the task is contrived rather than real with real consequences, the evaluation is unrealistic and artificial rather than naturalistic. Naturalistic evaluation is therefore always empirical, as shown in figure 6. While naturalistic evaluation is important in terms of showing the real efficacy of a technology in use, artificial evaluation can have key advantages in terms of cost and the control of confounding variables when establishing that benefits observed are due to the new technology rather than some other variable.

<table>
<tr><td></td><td>Value Naïve</td><td>Value Aware</td><td>Value Critical</td><td></td></tr>
<tr><td rowspan="2">Empirical</td><td></td><td></td><td></td><td>Descriptive</td></tr>
<tr><td colspan="3" rowspan="2">Artificial Evaluation</td><td rowspan="2">Evaluative or Normative</td></tr>
<tr><td>Non-Empirical</td></tr>
<tr><td></td><td></td><td></td><td>Descriptive</td></tr>
</table>

**Figure 5:** The artificial evaluation part of design science research in the framework

Finally, critical research is always value critical and always evaluative or normative, but may be empirical or non-empirical (or both) as shown in figure 7. Reasoning about goals and what is right, moral, or ethical is a non-empirical activity, but always value critical. This is consistent with Myers's and Klein's (2011) second principle of critical research – taking a value position. Goals considered appropriate in critical research include individual emancipation and improvements in society (the 3rd and 4th principles for critical research in Myers and Klein, 2011). Reasoning whether activities (e.g. business activities) are consistent with the goals and value position espoused is also non-empirical and value critical. Critical research can also be empirical if data is collected and analysed (according to the value critical and evaluative or normative perspective adopted). Whether a critical research paper takes an evaluative or a normative perspective is up to the researcher, but a normative position is common and appropriate.

 

<table>
<tr><td></td><td>Value Naïve</td><td>Value Aware</td><td>Value Critical</td><td></td></tr>
<tr><td rowspan="2">Empirical</td><td></td><td></td><td></td><td>Descriptive</td></tr>
<tr><td colspan="3">Naturalistic Evaluation</td><td rowspan="2">Evaluative or Normative</td></tr>
<tr><td rowspan="2">Non-Empirical</td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td>Descriptive</td></tr>
</table>

**Figure 6:** The naturalistic evaluation part of design science research in the framework

<table>
<tr><td></td><td>Value Naïve</td><td>Value Aware</td><td>Value Critical</td><td></td></tr>
<tr><td rowspan="2">Empirical</td><td></td><td></td><td></td><td>Descriptive</td></tr>
<tr><td></td><td></td><td rowspan="2">Critical Research</td><td rowspan="2">Evaluative or Normative</td></tr>
<tr><td rowspan="2">Non-Empirical</td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td>Descriptive</td></tr>
</table>

**Figure 7**: The critical research paradigm in the framework

## 4. Extending the perspective of a business research methods textbook

The textbook used in the new course is *Research Methods for Business Students (5th ed.)* by Saunders, Lewis, and Thornhill (2009). This textbook, like many others, largely takes an empirical approach to business research, focussing on the interpretive and positivist paradigms and methods. Critical Research (CR) and Design Science Research (DSR) are not mentioned.

Nonetheless, basic and applied research are contrasted, with the stated purposes of applied research including "results in solution to problem" and "findings of practical relevance and value to manager(s) in organisation(s)" (Saunders et al., 2009, p. 27). In dealing with the former without developing DSR as a method or paradigm, one either draws on existing solution possibilities (not developed by the researcher) or the development of new technologies or practices is not considered from a design perspective and DSR remains implicit rather than being explicitly treated. In dealing with the latter, note that manager(s) are explicitly the stakeholders. Other stakeholders' interests are not at issue and are certainly not critically examined. Such a perspective on applied research promotes a naïve conceptualisation of the role of values in applied research and does not allow for the possibility of CR.

Saunders et al (2009) further develop a main overview framework to guide the research student readers – the "research onion". The research onion has multiple layers with each layer becoming more detailed from the outside in. It starts with "philosophies" at the outermost layer, progressing through "approaches", "strategies", "choices", and "time horizons", and with "techniques and procedures" at the centre. The only approaches covered in the textbook are the deductive (theory testing) approach and the inductive (theory building) approach, roughly correlated with positivism and interpretivism respectively. A constructivist, DSR approach is not discussed. Similarly, under strategies, individual research methods such as experiments and grounded theory are discussed, but they all focus on empirical research. No mention is made of rhetorical argumentation, problem solution/technology design, or critical examination of values.

In order to address this, in the new course, the figure is supplemented with additional concepts that correspond to DSR and CR being added to the different layers of the onion. In the new course, at the philosophy layer/level, ontological, epistemological, and axiological issues are explicitly discussed.

Interestingly, the version of the research onion existing in Saunders et al (2009) does include pragmatism as an epistemological perspective, which is relevant to Design Science Research in particular. At the approach layer/level, a creative design/inventive (i.e. abductive/analogical) reasoning approach is added to deductive and inductive reasoning approaches. Furthermore, at the strategy layer/level, problem analysis and technology invention, design, development, and construction are mentioned as methods relevant to DSR, while stakeholder and assumption analysis are discussed as strategies/methods appropriate for CR.

Interestingly, the Saunders et al (2009) textbook includes the research paradigm framework by Burrell and Morgan (1979). The Radical Change vs. Regulation dimension of their framework is very relevant to Critical Research, with the Radical Humanist and Radical Structuralist paradigms (Burrell & Morgan, 1979) aligning well with Critical Research, although the textbook doesn't discuss this. In the new course, this is explicitly presented and discussed – i.e. that research advocating radical change does not align with meeting the needs of manager(s), as was developed as the focus earlier in the textbook.

## 5. Introductory treatments of design science research and critical research

The new course addresses Critical Research and Design Science Research by giving each paradigm a week's introductory treatment in the syllabus. The new and augmented frameworks described above, which are covered early in the course, are revisited to set the context for more detailed (but still introductory) treatment.

### 5.1 Design science research introduction

The introductory treatment of DSR is provided fairly late in the unit, after empirical positivist and interpretive paradigms and methods are presented in some detail. The introduction begins and is motivated with discussion of the artificial (built by humans) nature of most of the world we live in, how human problems and goals are often achieved through creation of new technologies and/or practices to solve/meet them, and how empirical research doesn't create such new artefacts.

The week's instruction then revisits the frameworks developed earlier in the unit, including the applied nature of business research, the framework described in section 3, and the augmented research onion framework described in section 4.

Next, since there is no reading in the textbook on DSR per se, key literature is identified and introduced to help the student get an overall perspective. Literature highlighted includes Simon (1996) and Checkland (1981), as motivation and introduction. Other readings introduced focus on process views of DSR and the form and role of theory on DSR. The process view is concerned with what steps and activities there are (or should be) in conducting DSR. It is emphasised that there are different models (e.g. Nunamaker, Chen, & Purdin, 1991; Peffers, Tuunanen, Rothenberger, & Chatterjee, 2008; Vaishnavi & Kuechler, 2004; John R. Venable, 2006a) and that there is an inherently iterative nature in much DSR work. In particular as part of the process perspective, the need for evaluation and different forms of evaluations (artificial vs. naturalistic, John R. Venable, 2006a) in order to obtain appropriate research rigour are emphasised. The theory aspect develops the idea of design theory (Walls, Widmeyer, & El Sawy, 1992) and different ideas and variations on how and when design theory should be developed (John R. Venable, 2006a, 2006b) and the content and structure of a design theory (Gregor & Jones, 2007; John R. Venable, 2006b; Walls et al., 1992).

Hevner et al (2004) is highlighted as the "received view" of DSR, with its seven guidelines for conducing DSR, although the fact that there is on-going debate is also discussed.
This above literature is primarily drawn from the IS discipline, but it could be augmented to also draw on the Management discipline literature, e.g. that by van Aken (2004, 2005, 2007).

Finally, a template structure for a thesis using a DSR approach is given and discussed.

### 5.2 Critical research introduction

Critical Research is introduced the following week. The introductory treatment follows a similar pattern to that of DSR in the preceding week, beginning with a review of overview frameworks and concepts to contextualise CR. Instead of emphasising the artificial nature of the world, discussion centres on whose goals are served by the research and whose interests are affected by research.

 

The presentation and discussion of Critical Research primarily draws on the work of Stahl (2008b) and Cecez-Kecmanovic in the IS field, but also on Jürgen Habermas and his Theory of Communicative Action (Habermas, 1984) more generally. Myers's and Klein's (2011) recent paper - "A Set of Principles for Conducting Critical Research in Information Systems" – will also be a useful reading, but this was not available when the course was offered.

Drawing on Stahl (2008b), the week's presentation and discussion covers the critical intention, critical topics (e.g. social control and domination, dysfunctional problem reduction in IS, and the digital divide(s)), critical theory (e.g. Habermas, 1984), and critical methods. Several areas of Habermas's work are covered, including his "action types" (instrumental, strategic, normatively regulated, and communicative actions) and particularly his "ideal speech situation". This is in line with Myers's and Klein's (2011) first principle of using core concepts from critical social theorists.

If there were more time in the unit (and the material is not covered elsewhere in a program of study), stakeholder analysis methods could be covered as well as the relationship of CR to DSR, e.g. as discussed by Venable (2009) and Stahl (2008a).

## 6. Student perceptions

The new Introduction to Research Methods (in business) course was taught for the first time in the first half of 2010. There were three sections of the course, one of which was taught by the author. The other two sections were taught by instructors from other disciplines with students mostly from those other disciplines. Each section was allowed to bring out the emphasis that the instructor wanted. These other sections did not include the material on and integrating DSR and CR into the course, instead focussing on empirical research as it is traditionally taught in other business disciplines.

The new course was well received by the students in the section taught by the author. Naturally, they were concerned that the textbook did not bring the DSR and CR perspectives into its content and wondered why this was the case. This lead to good discussions about the diversity of research and research methods, the difficulty of developing and keeping a holistic perspective, and particularly on the on-going development of and debate about research and research methods.

The final item of assessment of the course is to develop a 10 page (maximum, excluding references) research proposal. Several of the students developed their proposals for research employing DSR. None developed a proposal for research using the CR paradigm. The DSR proposals were generally equally good as or better than the more traditional empirical proposals (whether positivist or interpretive in research paradigm).

Student evaluations of the course overall were positive, but separate figures for the three different sections are not available. Teaching evaluations for the author in particular were very positive, perhaps partly due to the way the new course was organised and the way the DSR and CR material was integrated, presented, and discussed. Difficulties with differences between figures in the text and the way they were augmented in the course didn't seem to detract from the course and teaching evaluations. In particular, 100% of the students agreed that the teacher communicated well, some of which is undoubtedly due to the new and additional DSR and CR material.

## 7. Summary, limitations, and future research

This paper has presented a description of the initial offering of an Introduction to Business Research Methods course that integrates both Design Science Research and Critical Research into the course. The description is offered in the hope that others teaching introductory research methods courses may find the ideas useful. Features of the new course to facilitate this integration included (1) development of an over-arching perspective on business research as applied research and considering its implications, (2) development of a new framework to allow comparison of different research paradigms, including DSR and CR, (3) modification and extension of existing frameworks from the textbook used in the course to include DSR and CR perspectives and methods, and (4) development of instruction and discussion for one week each on DSR and CR. The approach to the last of these included Socratic discussion to highlight issues why DSR and CR are relevant, revisiting frameworks that integrated different research paradigms and methods, presentation and discussion of key literature in the DSR and CR areas to highlight key issues.

The current paper reports on only one offering of the course by one teacher (the author). Student feedback did not address the design of the course per se and especially not the ways in which material was integrated on DSR and CR. Therefore, evidence of the success of the course is rather weak. However, the success of the students who developed DSR research proposals and the general satisfaction reported by the students does provide some evidence of the success and usefulness of the approach.

The course tended to focus more on the IS discipline and not draw on the literature across other business disciplines. This is partly due to the lack of a Design Science perspective across other business disciplines, but could be augmented as discussed in sections 5.1 and 5.2.

The design of an introductory research methods course integrating all these paradigms would benefit substantially from further research, both by more rigorously assessing and measuring the outcomes in terms of student success and adoption, as well as by exploring alternative designs for the course.

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