

Last updated: 12/30/23

METHODOLOGICAL APPENDIX

Raffaella Borasi

(with contributions from Kara Finnigan)

Introduction

This appendix has been included to provide more information on the research methodology employed in conducting the case studies featured in the rest of the book. While not yet common, other books (see, for example, Bryk & Schneider, 2002) have included an expanded discussion of the research methodology used, as a way to both legitimize the research findings reported and increase knowledge in the field about research methodology.

We wrote this Methodological Appendix with two main goals. First, we wanted to show that the stories and other findings reported in this book were the result of systematic and rigorous empirical research. We think this is especially important because of the common confusion between “cases” and “case studies,” the widespread skepticism about the rigor and legitimacy of qualitative research, and the paucity of empirical studies on entrepreneurship, especially using a qualitative methodology.

Second, we hoped to enable other researchers interested in conducting case studies to benefit from our experience, and hopefully encourage more researchers conducting studies of this kind to share more about their approach. Indeed, as typical of qualitative studies of a certain complexity, this research project presented several challenges along the way and required a number of creative decisions and solutions. We often wished that we knew more about how other researchers conducting similar studies had approached these problems, but unfortunately this

kind of information is rarely made available. We believe that the field could greatly benefit if more researchers start to share what they learned about the research methodology employed in their specific studies, as well as the specific tools they used.

To address these goals, we have organized this methodological appendix to provide:

- Information about the research team and how it operated – as working with a large research team represented both a strength and an additional challenge in this project.
- Background information about the case study approach we assumed, and why we chose this methodology for our study.
- Information about how the subjects for the case studies were selected.
- Information about the study design, including how the interviews were conducted and protocols created to ensure consistency across cases, and other data sources used in addition to interviews for each case.
- Information about how we structured our data analysis, including what codes were used consistently across all the case studies, and how we created and used this set of codes; how we used a qualitative software package to help us organize the data and the results of their coding; the guidelines provided for the preparation of a “case study database” summarizing findings for each case study; and, how we conducted a systematic cross-case analysis based on all the individual “case study databases” thus generated.
- Final reflection about the process of conducting these case studies and major lessons learned as researchers.

The research team

The very nature of this project called for a large research team. First of all, case studies are very labor intensive, as it will become even more evident as we explain in detail what was involved in our data collection, analysis and reporting of

the findings. In addition, our desire to study entrepreneurial educators representing many different sub-fields within education required us to have on the team researchers with some expertise in each of those fields, in order to fully appreciate the context in which each subject operated and the significance of his/her challenges and accomplishments.

We were indeed fortunate that this variety of backgrounds was already represented in the Kauffman Study Group on Entrepreneurship in Education (KSGEE hereafter), a group of faculty and doctoral students across the Warner School of Education that came together to study the nature and implications of entrepreneurship in education when the University of Rochester was awarded one of the first round of grants under the Kauffman Campus Initiative in Entrepreneurship Education (KCI) funded by the Ewing Marion Kauffman Foundation. Taken together, team members provided expertise in all the following areas: teaching (Borasi, Che, Fonzi, Khan, Smith, Vitagliano), school reform (Borasi, Fonzi, Finnigan), K-12 school administration (Finnigan, Kirst, Vitagliano), higher education administration (Ames, Borasi, Doyle, Emery, Hazen, Rauf, Varerkar, Wall), educational policy (Finnigan, Rios), counseling (Ghassemi, Jefferson), human development (Duckles, Francis, Mukhopadhyay), and business (Beltram, Che, Jefferson, Miller). The team also presented considerably diversity – which we hoped would allow us to bring different perspectives and interpretation to the in-depth study of our case study subjects – as it included 6 males and 14 females, 4 members from under represented groups (African American, Latino/a, first generation Muslim), and 6 members who had lived in countries other than the U.S. (China, India, Italy, Pakistan).

There were, however, only four people in the group with prior experience in conducting case study research (Borasi, Finnigan, Fonzi, and Wall) as we began the project. It was important, therefore, for other members of the team to develop some basic knowledge and skills into his research methodology. This was achieved by having Professor Finnigan offer a 1-credit course on “Case study Design and Analysis,” which was attended by all the other members of the team (faculty and

students). Training in using the specific qualitative analysis software we chose to use (N6) was also provided at the beginning by an expert from outside the group; one of the group members (Michelle Ames) quickly became our “in-house expert” on using this software package, and provided training to all the new people joining the project as well as offered support to all other team members throughout the project.

Borasi and Finnigan took on the leadership of the project as a whole. Besides overseeing the entire project, their role included designing interview protocols and drafts for the common structure for the case study database and narrative reports – although the entire research team met several times throughout the process to discuss and revise those documents as needed (as reported in more detail later).

Research teams of two to four people were established to work on each of the case studies, once the subjects were selected. Each research team had full responsibility for data collection, data analysis and write-up of their assigned case study; one member was also designated as the leading author, with the ultimate responsibility for all phases of the case study (including meeting the established deadlines!). In selecting members for each team, we tried whenever possible to ensure that there was a person with expertise in the same field/area of specialization as the subject (as mentioned earlier, to use such expertise to help us look for and interpret data that would enable us to fully document and report on the significance of the subject’s experience), and a person who personally knew the subject because of professional interactions (so s/he would be able to ask questions and provide additional information that might otherwise have been missed). Because of this structure as well as the sheer number of people involved, the research team required considerable co-ordination throughout the project. It also allowed for less flexibility than is usually expected in qualitative research – as we will address when discussing specific elements of our data collection and analysis in the rest of this appendix.

Rationale for choosing a case study methodology

According to Yin (2003), the case study approach is a valuable tool when context is important, multiple data sources will be used, and theory guides data collection and analysis. In this study, case studies were used for exploratory purposes to address gaps in the literature on entrepreneurship, especially as it relates to the field of education.

As we began our research study, we articulated the following research questions:

1. What “entrepreneurial” skills, attitudes and behaviors do entrepreneurial educators employ?
2. What characteristics of the educator’s environment (both internal to his/her organization and external to it) support or hinder his/her ability to be entrepreneurial?
3. In what ways are entrepreneurial educators different from entrepreneurs in other fields?

The nature of these research questions called for using multiple sources of data that would help us uncover what entrepreneurial educators do as they engage in initiating specific innovations, and how their context as well as the nature of the innovations undertaken might affect such an activity. Our study would also necessarily be exploratory, as we did not find other in-depth research studies of entrepreneurial educators in the research literature on which we could build. For the same reason, we expected that theory – in the form of the conceptual categories we adapted from the literature on entrepreneurship we had reviewed – would guide our data collection and analysis.

For all these reasons, an exploratory case study approach seemed particularly suitable for our project. Furthermore, our methodology could be described as using

a multiple case study design and considering each individual “entrepreneurial educator” as our unit of analysis.

Selection of the case study subjects

The identification of our case study subjects was driven by three main considerations:

- We sought subjects that could provide rich examples of educators who had engaged in significant innovations that added value to their institution and its client; we also wanted to ensure that at least one of these innovations could be considered as an “enterprise” (i.e., initiatives intended to “live on”), so as to meet Green’s definition of entrepreneurship assumed by the University of Rochester as part of the Kauffman Campus Initiative (i.e., *transforming ideas into enterprises that generate value*).
- We sought diversity across subjects with respect to a variety of dimensions – including fields of specializations within education, roles/positions, gender and ethnicity.
- We wanted most of the subjects to be local; while this selection criteria was initially driven by logistical reasons, soon we realized that an added benefit of featuring only local entrepreneurial educators would be to demonstrate that successful entrepreneurial educators are not as “extra-ordinary” and rare as one might think.

It is worth noting that, while we were able to develop early on a substantial list of educators with a reputation for being successful innovators and agents of change, and which at least someone on the research team knew professionally, we also realized that we could not be sure that they would be appropriate subjects for our project until we had an extended conversation with each of them about his/her professional history and accomplishments. The goal of this preliminary conversation would be to get a better sense of the frequency and significance (in terms of “value added”) of the innovations they had initiated, verify that at least one

of those could be considered an “enterprise,” ascertain that the subject was reflective and articulate enough to be able to provide insights about *how* these innovations were developed, and more generally evaluate whether the subject’s story seemed rich enough to warrant an in-depth study.

Our selection process occurred in two rounds, mostly as a function of the project’s funding – as we were awarded a first internal grant (as part of the Kauffman Campus Initiative) to conduct a first set of five case studies, and then on the strength of these initial results provided additional funding to complete the project. For the first set of subjects, our main goal was to find “rich stories” to tell, although we also made sure that they represented quite different professions within education. As we got our second round of funding, we were more strategic in our choice of case studies to add, as now we wanted to make sure that we would achieve sufficient diversity in terms not only of professions within education, but also gender, ethnicity, and the “level of authority” the subject held in his/her organization.

Overview of the research design

To address the many questions we were interested in pursuing in our study, we designed the following sequence of interviews for each case-study:

- 1) A preliminary interview with the subject, to gather background information and to identify particular innovations s/he initiated (and also decide whether a case-study of that subject was warranted).
- 2) A second interview with the subject, focusing on examining how s/he went about the process of initiating a few specific innovations (selected on the basis of the first interview).
- 3) A third interview with the subject, focusing on gathering information about the attitudes, behaviors and skills s/he perceived as most important to accomplish her/his mission, as well as characteristics of the environment that most affected her/his performance.

- 4) A set of interviews with some of the subject's close collaborators, to gather their impressions about the attitudes, behaviors and skills that most contributed to the subject's success as well as to triangulate information provided by the subject on specific initiatives.
- 5) A fourth interview with the subject, to follow-up on specific issues raised by the previous interviews and their preliminary analysis (if needed).

While using in-depth interviews as the primary source of data is typical of many case studies, this seemed especially important to our study, as the nature of the phenomenon we were interested in (i.e., initiating innovations) is not the kind that can be easily observed in action. Therefore, we had to rely on accounts of the phenomenon provided by the people most closely involved in it, as well as artifacts produced in the process when available. However, in addition to the verbatim transcripts of the interviews described above, we also collected and examined relevant artifacts – which varied in each case, but usually included official documents (such as strategic or business plans, grant proposals, etc.), brochures and other marketing materials, informal written communications, and relevant media clippings.

All these data were then analyzed by a team of at least two researchers for each case study, looking at the specific categories and questions outlined earlier in this section. To minimize errors and biases, we:

- systematically triangulated data obtained from multiple sources,
- used detailed protocols to guide each interview,
- developed a unified coding scheme and used it to code all the data collected,
- created for each subject a “case-study database,” organized around essentially the same categories employed for coding, to report and synthesize the data,
- used more than one researcher in the analysis of the data,
- did a final “subject check” by asking the subject to review and provide feedback on the completed case-study database and/or a first draft of the comprehensive written report of the case-study.

Once all the individual case-studies were completed, we also conducted a “cross-case analysis” to systematically look at similarities and differences across cases, as well as trends.

Data collection

For each of the subjects studied we designed a sequence of semi-structured interviews to last about 1-1.5 hours each. The first set of interviews was designed to specifically address the following goals:

Interview #1:

- *Gathering sufficient information to determine whether the person should be selected as a case study subject*
- *Gathering sufficient information to decide which “initiatives” to focus on for the following interview*
- *Gathering background information on the subject*
- *Gathering the subject’s first impressions (before too much “exposure” to our ideas about entrepreneurship) about what attitudes, skills and behaviors have been important to his/her success, and what elements of the organization have most helped or hindered his/her activities*

Interview #2:

- *Gathering background information about the subject’s organization (to put other information in context)*
- *Gathering in-depth information about how 2-3 specific “initiatives” were carried out, so as to identify practices within each major component of the entrepreneurial process (Note: at least 1 initiative should be an “enterprise” – i.e., an initiative/innovation that had at least the potential to continue on)*

Interview #3:

- *Gathering the subject’s perspective on what traits, skills, attitudes, behaviors have been most instrumental to his/her success as a change agent in education*

- *Gathering the subject's perspective on what characteristics of the organization have helped or hindered his/her performance as entrepreneurial educators*
- *Gathering the subject's perspective on the roles played by close collaborators*

After this first set of interviews with the subject were completed, we also conducted interviews with at least one of the subject's close collaborators (as identified by the subject), with the goals of:

- *Gathering information about how the subject is perceived by others that can confirm and/or complement the subject's self-analysis of traits, attitudes, behaviors, etc. that help or hinder their entrepreneurial behavior and success as an educator*
- *Giving an opportunity to the interviewee to share other things they think are important for us to know about the subject*
- *(As necessary) Confirming/triangulating information provided by the subject about the selected initiatives; adding new information and perspectives to what has already been learned about these initiatives*

Finally, a follow-up interview was conducted with most subjects after the research team had the chance to review all the data collected up to that point, in the effort to "fill in" holes in the data and/or address new questions that may have arisen in this preliminary analysis. Thus, we explicitly identified the following goals for this fourth follow-up interview:

Interview #4 ("follow-up")

- *Asking clarifying questions about facts or events where we got incomplete or contradictory information*
- *Pursuing in more depth a few elements where this subject seems to be particularly strong and insightful*
- *Enabling the subject to share thoughts and ideas they may have developed as a result of the case study process*

Because different research teams would be conducting the interviews for different case studies, it was particularly important that we ensured consistency in the scope and format of these interviews, while also allowing enough flexibility to fully capture each subject's unique history, capitalize on the personal knowledge of interviewers, and follow up on unexpected insights and opportunities. We tried to achieve this goal by creating a set of detailed protocols for each interview, each including:

1. An articulation of the specific goals agreed-upon for that interview (as listed above).
2. A written text to be sent to the subject prior to the interview, explaining the focus and goal of that specific interview, as well as containing a few key questions we wanted them to think about prior to the interview; these texts were created to both ensure that the interview time would be used most productively and to ensure that each subject would receive the same information.
3. A suggested set of questions that could be used by the interviewers either to get the conversation started on specific topics or to probe further on points of particular interest; we were clear, however, that interviewers could use their discretion about which questions to use and in what order, and whether other questions might turn out to be more appropriate, in order to achieve the ultimate goal set for the interview.
4. A set of recommendations about what preliminary analysis of the data collected from this interview should be completed before moving to the next interview.

(NOTE: These protocols were too long to be included in this book, but could be available from the authors upon request).

A first draft of these protocols was created by the project leaders (Borasi and Finnigan) and then discussed with the entire team. This discussion was intended to both familiarize everyone with these tools and gather feedback and suggestions for

modifications before the tools were finalized. As the first interviews occurred, representatives from each research team met with Dr. Finnigan a few times to review and discuss together their transcripts, so as to further clarify ambiguous parts and respond to unexpected challenges and, when needed, further refine the protocols.

Overall, these protocols were used as intended by the various teams, although in a few cases the team chose to combine two interviews for logistical reasons and/or to postpone certain questions to the following interview if they ran out of time.

In addition to the verbatim transcripts of the interviews described above, we also collected and examined a number of relevant artifacts for each of the case studies. In preparation for specific interviews, subjects were asked to provide us with written documents or other artifacts that they thought could provide additional or confirming information about the specific initiatives we were trying to reconstruct in detail, or other aspects of their professional activity. We also independently searched for and collected other relevant sources of information, as provided for example by institutional records, brochures and other marketing materials, the organization's website, media clippings, as well as published and unpublished work by or about the subject. These artifacts were very important sources of information to verify and explain upon information provided by the subject and his/her collaborators, and occasionally invited us to ask specific questions in the interviews themselves.

Data analysis

In what follows, we discuss key aspects of our data analysis process, with special attention to coding process, the development of a case study database, and how we conducted a cross-case analysis. In addition, we will discuss the strategies we used to strengthen the validity and reliability of our data.

Coding the data

Having a large research team created some unique challenges for the coding of the data. While it is typical – and desirable – in most qualitative research studies to start with an initial set of codes that can be continuously augmented and refined as the analysis proceeds, we soon realized that the logistics of continually updating codes across the different research teams assigned to each case study, combined with limitations in the qualitative research software we were using (N6), made such an ideal quite impractical.

We decided, therefore, to establish a priori a set of codes based on our conceptual framework that everyone in the project would use for the coding of the data – although we were well aware that we would inevitably identify some limitations in this set of codes as the analysis progressed, and would have to figure out ways to work around it. A first draft of this coding scheme was prepared by the two project leaders (Borasi and Finnigan), based on the results of a preliminary literature review and conceptual elaboration of the research questions, which led to identifying a number of important conceptual categories we wanted to pay attention to (as reflected in the codes). This first draft was discussed at a first meeting involving the entire research team, and refined based on the feedback received. The revised set of codes was then “tested out” by representatives of all of the initial case study teams using one transcript, the group coded the transcript and discussed differences in coding as well as further elaborated on definitions of different codes. We also revised the protocols as a part of this step. The final coding scheme (as reported in Figure A.1) was then developed, and used to set up nodes and sub nodes on N6.

Figure A.1. *Finalized set of codes:*

1. Primary Subject Life & Professional History
2. Description of Initiative 1
 1. How Developed/Context
 2. Value Added
 3. Emergent Initiatives (that developed out of this)
 4. Success of the Initiative/Outcomes
 5. Sustainability
3. Description of Initiative 2 (*same sub-codes as above*)
4. Description of Initiative 3 (*same sub-codes as above*)
5. Description of Initiative 4 (*same sub-codes as above*)
6. Primary Subject's Entrepreneurial Process
 1. Recognizing/Evaluating Opportunity
 2. Motivation/Personal Benefit
 3. Securing Resources
 4. Planning
 5. Implementation
 6. Challenges (at any point in the process)
7. Primary Subject's Characteristics and Practices
 1. Vision/Philosophy
 2. Marketing
 3. Finances
 4. Personnel/Team Building
 5. Risk Assessment
 6. Planning for/Dealing with Growth
 7. Decision-making
 8. Problem Solving
 9. Developing an Entrepreneurial Culture
 10. Building on Networks/Connections (General Networking)
 11. Communication
 12. Passion
 13. Persistency
8. Collaborators
9. Organizational Characteristics (of Primary Subject's Organizations)
 1. Facilitators/Enablers
 2. Obstacles/Hindrances
10. Other

As to be expected, as each team started working on its own case study data, we found the need to identify some additional codes for the data. When this happened, though, rather than entering a new code in their copy of N6, researchers

on that team were instructed to identify these new elements under one of the existing major categories (or under “10. Other” whenever none of the others seem to fit) and to utilize N6’s capability to add a brief comment to the data thus coded.

In a few cases, we decided that interpretation of some of the existing codes needed to be clarified and/or expanded. For example, we clarified the code 6.3 (Primary Subject’s Entrepreneurial Process – Securing resources) should be used to identify information about how the subject secured the necessary resources to launch an initiative in terms of both funding and human resources. In a few other cases, categories we initially had thought of as important to track did not turn out to be so central (as it was the case, for example, with codes 6.2 and 6.6) and were simply abandoned.

In the next section we will discuss how we tried to minimize and overcome these limitations at the stage of creating a case study database to summarize the major findings for each case study.

The creation of the case study databases

Yin (2003) calls for the development of a case study database as part of the analysis process to increase the reliability of the entire case study. The case study database is not the more formalized, narrative write-up of the case study, but rather the raw data organized in such a manner to allow the investigator to more systematically analyze the data. While we planned from the beginning to record and systematically organize the findings from each case study in a case study database, as suggested by Yin (2003), we did not initially create a common structure to facilitate this process. Our rationale was that it would be better not to provide too prescriptive guidelines for the creation of these documents, so as to allow each team the flexibility needed to reflect the unique character and contributions provided by each case study. However, when the first two case studies were completed, and their teams shared their narrative reports and case study database, these documents made it evident that not everyone had the same expectations in terms of what the

case study databases and narrative reports should have at a minimum, and more detailed guidelines would indeed be needed.

In order to come up with a proposed structure that everyone could follow, one of the principal investigators created a “model” case study database and narrative report based on the case study she was leading, trying to systematically follow the key conceptual categories identified by our preliminary literature review, further refined by the insights we were gaining from the completion of a few case studies, and taking into consideration the positive aspects as well as the limitations recognized in the first two completed documents. She also created a document for the group proposing a structure, categories and questions that could be used in constructing the case study database and narrative report for each case. This document, along with three examples of case study databases and narrative reports now available, was discussed at a team meeting, and further modified based on the feedback and input thus received.

Given the length of this document, in Figure A.2 we have just reported the key categories we agreed to explicitly address in each case study database, and in Figure A.3 we have provided an example of the more detailed questions we articulated for each of these categories and we all agreed to try to address based on the data collected so as to ensure a systematic and in-depth analysis across all the case studies. A comparison between Figures A.1 and A.2 also makes evident how we ended up “revising” the initial set of codes used to input data in N6, by choosing a slightly different set of categories to organize our data and preliminary findings in each case study database, as a key step towards our final analysis.

Figure A.2. Categories addressed in each case study database and narrative report

1. **Life History** (prior to current position)
2. **Organizational context**
3. **Subject's activity in current position** (with focus on innovations initiated and their value added)
4. **In-depth description of each selected innovation** (2-4)
5. **The subject's "entrepreneurial practices" in action**, looking at each of the following key "areas of practice":
 1. **Vision**
 2. **Dealing with risk**
 3. **Dealing with finances**
 4. **Dealing with human capital (including networking)**
 5. **Decision-making**
 6. **Problem-solving**
 7. **Dealing with growth/expanding the impact of one's innovations**
 8. **Dealing with the organizational culture**
6. **The subject's enactment of the "entrepreneurial process"** – looking specifically at each of the following stages of the process of initiating specific innovations:
 1. **Identifying opportunities/coming up with ideas for innovations**
 2. **Evaluating whether an opportunity is worth pursuing**
 3. **Making detailed plans for the innovation**
 4. **Gathering the necessary resources (both human and financial) to launch the innovation**
 5. **Implementing and monitoring the innovation**
 6. **Ensuring long-term sustainability (when appropriate)**
7. **The subject's "entrepreneurial characteristics"** – as recognized by the subject and his/her collaborators
8. **Characteristics of the organization which supported or hindered the subject's entrepreneurial activity** – as identified by the subject and/or his/her collaborators

Figure A.3. Illustration of questions to be addressed for specific categories in each case study database (selected category: Dealing with risk).

Dealing with risk:

- How much risk can the subject tolerate?
- How does the subject view the risk of “sinking the boat” vs. “missing the boat”?
- What is the subject’s attitude towards mistakes/failure?
- How does the subject evaluate the risk associated to specific innovations? Are there specific strategies/processes that s/he employs?
- What strategies does the subject use to minimize the risk for specific innovations?

We also developed a 2-column format to organize the data in each section of the “case study database” to allow us to record a summary of our findings and insights (on the left) and identify supporting data as well as significant quotes (on the right) – as illustrated by the excerpt reported in Figure A.4.

Figure A.4. Illustration of 2-column format each case study database (selection: First question within Dealing with risk for Pat Chiverton).

b. Dealing with risk:	
• How much risk can the subject tolerate?	
There is a lot of risk involved in the initiatives she has undertaken – yet she seems about to tolerate quite a bit of risk	“I will probably take more risk than a lot of people would take, especially in education.” (cS1, 606-607) “It’s important to know that we did not know that these [initiatives] were going to work. I mean, we were taking a risk starting, especially the leadership program. This was something we believed in but didn’t know that it was going to work and still don’t know for sure” (cS1, 343-349) some examples in cS2, 461+
Some of her collaborators think she may even tolerate too much risk!	CC2 303-318

In great part, her willingness to take a risk and her evaluation of the risk itself depends on how strong is her sense of the direction they should be going (because of her knowledge of the field) and how the specific initiatives fits that	“I think often times you just accumulate all the data and really I make a decision a lot in my gut, you know, it just feels like the right thing to do. It may be a mistake, but I’m not afraid – if it doesn’t succeed it doesn’t succeed. I mean, I don’t take really risky things because you can’t afford to do that, but if I believe that this is the direction that nursing is going and that we need to be on the cutting edge, I’ll make that decision knowing that our budget is kind of a fine line.” (cS2, 606- 615)
--	---

In part, her willingness to take risks is connected with having some “exit” strategies in case things do not work out and minimizing risk by “trying out things first” in a small scale (see later for more detail)	
--	--

In putting together their narrative reports, each team was further asked to begin to identify specific “practices” that they observed their subject use in relation to specific aspects of practice or components of the entrepreneurial process. They were further instructed to briefly characterize each of these practices and provide a list at the end of the section of the report discussing a specific area of practice/component of the entrepreneurial process.

Cross case analysis

While each team developed an in-depth analysis of the data collected for each subject, allowing for an exploration of these individual cases of entrepreneurial educators in a “holistic” manner, we also wanted to look across the eight cases to begin to identify similarities and differences, as well as common themes. This cross-case analysis took place in a number of iterative stages.

First, the case study databases and N6 data for the first six completed case studies were systematically examined for similarities and differences within each category of analysis – e.g., risk-taking, coming up with ideas, contextual factors affecting the subject’s entrepreneurial behavior, etc. This preliminary analysis

allowed us to identify a few common themes and general insights (as reported in Borasi & Finnigan, 2010).

When all the eight case study databases and reports were completed, including the lists of “practices” each team observed its assigned subject use in relation to specific categories, we then began a more focused analysis of the practices thus identified. Looking through the lists each team had created, Borasi and Smith then developed a “common” list; while some of the original practice identified by each team were reported verbatim in this list, more often they were reworded in order to be able to generalize and consolidate similar items, and thus eliminate redundancy; some items were also eliminated because they were too specific to a subject’s context or not particularly relevant to the category they had been assigned to.

This common list was then sent back to each team, with the request to indicate the extent to which their subject used each of the listed practices (on a regular basis, just occasionally, or not at all), while identifying in writing the evidence they had used to make that evaluation. The results of this analysis were reviewed by either Smith or Borasi, both to provide the perspective of another researcher who had not been involved with that case-study, and to ensure consistency in the interpretation of the guidelines as well as the definition of each practice. Items where there were questions or disagreements were further discussed with a member of the team, and agreement reached after this discussion. The final agreed-upon evaluations were then entered in tables similar to the ones reported in Chapter 11, and these tables used (along with the entire case-study reports) as the basis for examining the specific uses made of each practice across subjects, with the ultimate goal of identifying potential benefits and drawbacks of each practice, as well as understanding the conditions under which it could be used most effectively by education change agents.

This analysis, in turn, suggested the need for a further revision of our comprehensive list of “practices.” Building on the results of the previous evaluation,

Smith made a first pass at a systematic evaluation of the extent to which each subject used each of the items in this final list of practices, following these revised guidelines:

- *Indicate with “X” if there is clear evidence that the subject used this practice at least once, also indicating which of the following sources of evidence applied:*
 - Explicitly articulated by the subject
 - Explicitly articulated by a collaborator
 - Use observed in a particular innovation/event (IDENTIFY)
 - Directly observed
 - Other (EXPLAIN)
- *Indicate with “*” if you think the subject used this practice, but you do not have clear evidence (EXPLAIN)*
- *Indicate with “No” if there is clear evidence that the subject could not, or chose not to, use this practice (EXPLAIN)*
- *Leave the cell blank if you do not have sufficient evidence to make a clear evaluation*

Dr. Smith’s evaluation was then reviewed by a member of the team assigned to each case-study, and as in the previous case disagreements were resolved through discussion. The tables reported in Chapter 11 represent the compilation of these final results.

Ensuring validity and reliability

Our research design included a number of strategies to meet standards for validity and reliability, as discussed by Yin (2003). Two strategies were employed that relate to the validity of the study. First, each team used multiple sources of evidence for triangulation purposes, including interviews with various individuals, artifacts and in some cases even observations.

Second, the data analysis included a subject check; each subject was asked to read through the draft of each case study database when it was ready, and to provide feedback about its accuracy as well as add information if desired; the draft

was then revised based on this input and the additional insights gained through this process.

The use of interview protocols and consistent guidelines for the creation of each case study database by each research team also was intended to minimize errors and biases and, as a result, meet standards for reliability. In addition, having at least two people involved in the data collection and analysis of each case study helped minimize the risk of individual interpretations and biases. The development of the case study database increased the reliability of the study's findings. Finally, the iterative process followed in the cross-case analysis, involving multiple researchers both within and outside each case-study team, was further intended to increase reliability.

Final reflections

To conclude, we would like to briefly summarize and highlight some key insights and lessons learned from this unique research experience:

- *Working in large research teams doing qualitative research requires some interesting compromises:* As most of the members of the team had previously worked individually or in groups of 2-3 researchers on qualitative research studies, we had taken for granted procedures such as progressively refining a set of codes based on the on-going analysis of the data. As we tried to coordinate the work of multiple teams working simultaneously on different case studies in the set, we realized that this would not be possible – at least not in the way we were used to doing it. Instead, we “compromised” by agreeing to consistently use the originally agreed upon set of codes (which we first refined based on some field-testing that involved representatives of each team), annotating the “changes” that we would have liked to make, and capturing those changes at the time of structuring the case study databases.
- *Value of using case study databases:* those of us who had conducted case study research before truly had not fully appreciated the key role of systematically

creating a case study database to summarize the major finding of each case study (as recommended by Yin, 2003) until we engaged in this project. Agreeing upon a common way to structure each case study database was also critical in order to coordinate multiple case studies done by different research teams and make a rigorous cross-case analysis possible.

- *Challenges created by identifying subjects with their real names:* While anonymity is usually one of the conditions for obtaining permission for most human-subject research, and we did assure upfront all our subjects that their anonymity would be maintained if they so desired, all of them chose to reveal their identity in the book – as they wanted to be recognized for their actions and innovations. This decision, though, created other challenges in terms of protecting the anonymity of other people in the organization they might have referred to – including the collaborators that agreed to be interviewed as part of the research study.
- *Challenges of communicating effectively the results of in-depth case studies:* While the research team was excited about and energized by what we were learning from individual case studies as well as their comparison, we felt very frustrated by the difficulty of sharing these findings with others without telling the whole story of our subjects – which is usually impossible to do within the page constraints of typical articles or conference presentations. A book like this certainly gave us more scope to share both the richness of our subjects' stories and the results of our analysis – although even in this case choices had to be made about what to include and what to leave out. In the end we had to accept the reality that we would never be able to convey all we learned in a single publication, but rather we should try to carefully select what messages we wanted to share with what audiences, and find creative ways to provide sufficient evidence to make our findings credible and compelling.