The evolution of a mixed methods study in work-integrated learning

CRAIG CAMERON

Griffith University, Gold Coast, Australia

This article describes the evolution of, and rationale for, a mixed methods study of risk management by university lawyers in the specific context of work-integrated learning (WIL) programs. The evolution provides a road map of the research design, incorporating references to research methods texts used by the author at each stage of the mixed methods design. The roadmap also includes primary resources developed during the mixed methods study, such as survey instruments, invitations to participate, consent forms, conceptual models and interview guides. These resources can be accessed by WIL researchers to assist them with navigating mixed methods design. WIL researchers are also provided with a number of strategies to promote the validity of their research and research limitations to be mindful of when conducting WIL research using mixed methods.

Keywords: Work-integrated learning, risk management, mixed methods, case study, survey design

This article describes, and provides a rationale for, a mixed methods research design applied in a PhD thesis (Cameron, 2016) to explore risk management by university lawyers in WIL programs. Mixed methods research integrates qualitative and quantitative research within a single study (Bryman, 2012). The major characteristics of a mixed methods design include its sequencing, priority, mixing and structure of the quantitative and qualitative research (Creswell & Plano Clark, 2011). The researcher needs to decide which study to conduct first and why, the priority or ‘emphasis’ given to each study, and when to mix the qualitative and quantitative strands. In terms of structure, a mixed methods design can have fixed and/or emergent elements (Creswell & Plano Clark, 2011). The selection and application of quantitative and qualitative methods are pre-determined and planned in a fixed mixed methods study, whereas emergent mixed methods studies are typically employed to address an issue during the first research method applied. A mixed methods study with fixed and emergent aspects may arise if the sequencing of the study is planned (e.g. quantitative followed by qualitative), but the methodology of the second study only emerges after the researcher interprets the results of the first study (Creswell & Plano Clark, 2011, p.55). Nevertheless, before any mixed methods study proceeds, it is crucial that the researcher justifies the selection, and mixing, of two research methods within one study – does a mixed methods design, which may be more time consuming and costly, better achieve the purpose of the research?

The evolution, selection and characteristics of a mixed methods research design, as applied by the author (‘WIL research’), are first presented in this article. The evolution provides a road map of the research design, with the remaining parts of the article organized in the chronological order of the research design’s execution. This road map provides the WIL researcher with a description of, and rationale for, the key elements of the design, in particular references to primary and secondary resources, which can assist the WIL researcher with conducting mixed methods research. The strategies that can be employed to validate the mixed methods research, as well as the lessons for WIL researchers arising from the limitations of a mixed methods design, are discussed in the concluding sections. In the spirit of facilitating WIL research, the documents developed by the author to conduct the mixed methods research are publicly available (see Cameron, 2016, Appendices A-H), or can be requested directly from the author.

1 Corresponding author: Craig Cameron, craig.cameron@griffith.edu.au
MIXED METHODS RESEARCH DESIGN

Evolution

The research design adopted by the author could be best described as an evolution of 32 months’ duration (May 2013 – December 2015), from the selection of the mixed methods design through to the conclusion of the qualitative data analysis. Each element of the research design is outlined in Figure 1. Figure 1 is intended to illustrate that the mixed methods design is not linear or sequential. In fact overlap exists when executing the mixed methods design, particularly during the qualitative phase. For example, the interviews and data analysis were conducted simultaneously, and the interview questions were amended before, during and after the pilot study.

Nevertheless there were two distinct phases associated with the mixed methods design: the quantitative phase (2013); and a qualitative phase (2014 and 2015). The quantitative phase, a survey of 41 university lawyers, provided preliminary insight into university lawyer perceptions of role, legal risk and risk management. The qualitative phase was a case study of 13 university lawyers from 12 university sites. University lawyers, being the unit of analysis (Stake, 1995) for studying risk management, deliver in-house legal services to the university, and along with WIL staff and university management, are involved with risk management in WIL programs. Each element of the case study, being the dominant strand of the mixed methods design, is described in this article and presented in chronological order of execution as outlined in Figure 1.

FIGURE 1: Mixed methods research design

Rationale for Selecting Mixed Methods

The decision to apply quantitative and qualitative methods was driven by the literature review and the purpose of the research, that is, to explore risk management by university lawyers in the specific context of WIL programs. The inclusion of quantitative methods was due to the significant gap in the literature. There was no previous study of university lawyers in relation to WIL programs from which an initial understanding of role, legal risk or risk management could be gained or to evaluate for the purpose of constructing a qualitative design. Quantitative study could not only deepen understanding about these research topics, but more importantly could assist with formulating the research questions and support the planning and findings of the qualitative research. A survey was the preferred quantitative method
because it could be administered quickly to a geographically diverse population (Sherblom, 1993), saving valuable research time, and could generate a significant sample so as to obtain an initial understanding of university lawyers, legal risk and risk management afforded by university lawyers.

The research purpose, and the limitations of survey research, dictated the use of qualitative methods. The two main weaknesses of survey research are the static or pre-determined nature of the survey instrument (Guba & Lincoln, 1994) and that it strips the research of context by quantifying the data (Bryman, 1984; Castellan, 2010). A survey does not offer flexibility in responding to questions (unless there are open ended questions) (Creswell, 2008), whereas qualitative methods gave university lawyers the opportunity to describe their own experiences with legal risk and risk management. Further, qualitative research can identify variables not previously considered which are then added to an evolving research design. If these variables are not included in the survey instrument, they can cannot be added during the research process (Guba & Lincoln, 1994). The primary reason for mixing the methods is what Greene, Caracelli and Graham describe as ‘development’. According to the authors, “development seeks to use the results from one method to help develop or inform the other method”, which is designed to “increase the validity of constructs and inquiry results by capitalizing on inherent method strengths” (Greene, Caracelli, & Graham, p. 259). The survey of university lawyers informed the development of the qualitative design. A subsidiary reason for mixing methods was to triangulate the quantitative and qualitative data as a method of validating the research.

Characteristics of the Mixed Methods Design

The mixed methods design had fixed and emergent elements (Creswell & Plano Clark, 2011). A plan to conduct a two-phase study was fixed, as was the survey design, but details of the qualitative design only emerged following the survey data analysis at the end of 2013. There were two consequences of the fixed and emergent structure of the mixed methods design. First, the data collection process was sequential, with the collection of quantitative data first, followed by qualitative data. Second, the quantitative and qualitative analyses were separate. The qualitative and quantitative phases were mixed at two points: during the design stage when the survey results were applied to inform the qualitative design, and during the qualitative study. Table 1 displays the qualitative and quantitative data collected and mixed in order to answer the research questions.

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<tr>
<th>Research Question</th>
<th>Quantitative</th>
<th>Qualitative</th>
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<tr>
<td>RQ1: What legal risks do university lawyers manage with respect to WIL programs?</td>
<td>Survey instrument</td>
<td>Interviews, e-mail communications</td>
</tr>
<tr>
<td>RQ2: How do university lawyers manage legal risk with respect to WIL programs?</td>
<td>Survey instrument</td>
<td>Interviews, e-mail communications, university WIL agreements, university policies, WIL program documents and other WIL resources</td>
</tr>
<tr>
<td>RQ3: What factors may influence risk management by university lawyers with respect to WIL programs?</td>
<td>Survey instrument</td>
<td>Interviews, e-mail communications, university strategic plans and university policies</td>
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The rationale for the mixed methods design also dictated that greater emphasis was placed on the qualitative research, with the survey playing a supporting role. The purpose of the qualitative research was to explore risk management by university lawyers, with the survey data facilitating that exploration by triggering questions, observations and issues that informed the qualitative design.

**THE QUANTITATIVE PHASE: A SURVEY OF UNIVERSITY LAWYERS**

*Survey Instrument*

The literature inspired and informed the quantitative phase, which is reported in detail by Cameron and Klopper (2015). The survey instrument, developed by the author, represented a cross-sectional survey of the practices and opinions of university lawyers with respect to their role in WIL programs, legal risk and risk management (see Cameron, 2016, Appendix B). Whilst it would have been preferable to adopt an existing instrument on the basis of validity and reliability (Creswell, 2008), there was no previous study in which legal risk or risk management in WIL was examined from a university lawyer perspective. The survey, of two and a half pages, took approximately 10 minutes to complete. It was designed in this way to increase the response rate and to decrease response error through fatigue (Creswell, 2008). A participant information and consent form (“the form”) was attached to the survey (see Cameron, 2016, Appendix C). The form was designed to meet the ethical guidelines of the host university and to pitch the benefits of participation in an attempt to improve the response rate (Creswell, 2008).

*Sampling and Survey Administration*

The survey was administered, in person, to university lawyers who attended the 2013 SOUL (Society of University Lawyers) conference at Australian National University, Canberra. Convenience sampling was employed to capture, in one location at one point in time, a large proportion of university lawyers in Australia, and to increase the response rate. An additional benefit of being present was that university lawyers could approach the author to seek clarification of items on the survey, which is not available with a mailed or electronic questionnaire (Creswell, 2008). For example, some university lawyers were not familiar with the key term ‘work-integrated learning’. When associated terms were proffered, such as “internship”, “practicum” and “clinical placement”, they understood. This was a valuable lesson when designing the qualitative research. This clarification also minimized survey error associated with university lawyers referring to non-WIL activities, such as work experience and other forms of work-based learning, in their survey responses.

*Finalizing the Research Questions*

The findings from the survey data analysis fortified the research questions to be addressed by the mixed methods research design. In particular, university lawyer responses to an open ended survey question about their role in WIL programs inspired Research Question 3 (RQ3) (Table 1). The survey findings raised a number of issues associated with the role of the university lawyer as risk manager, which triggered connections with the literature. These connections piqued an interest in exploring the issues further, culminating in RQ3. The issues university lawyers experienced with their role were conceptualized in the mixed methods study as factors which may influence risk management.

**THE QUALITATIVE PHASE: A CASE STUDY OF UNIVERSITY LAWYERS**

*Selection of Case Study as Qualitative Design*
The second phase of the mixed methods research design was a multiple instrumental case study, as opposed to an intrinsic case study (Stake, 1995), in which university lawyers were the relevant case. Research intent (or purpose) guided the type of case study selected. The primary intent of the author was not to learn more about the university lawyer (or case) as a category of legal counsel (intrinsic), but to provide insight about the phenomenon of risk management in WIL programs (instrumental). The selection of multiple university lawyers was instrumental to deepen understanding about the phenomenon being studied.

Case study was selected as the most appropriate qualitative research design, due to its compatibility with the research purpose. By examining a small targeted group of university lawyers, the case study provided an in-depth understanding of risk management by university lawyers in the context of WIL programs. Grounded theory (refer Bryman, 2012) was another qualitative research design examined but ultimately considered not appropriate. The research was designed to be descriptive and explanatory concerning risk management, and not aimed at developing a theory of risk management grounded in a significant number of university lawyers’ experiences. The research also met the sole pre-requisite of a case study – the identification of specific cases within defined parameters (Creswell, 2013; Stake, 1995). The university lawyers (or cases) were bounded by geographic location (Australia), definition (in-house counsel) and type of university activity (WIL programs).

Interview Design

The interview design incorporated a mix of semi-structured and structured interview questions with no pre-determined order for answering the questions (Bryman, 2012; Merriam, 2009). A degree of structure was required to ensure “cross-case comparability”, which is characteristic of multiple case study research (Bryman, 2012, p. 472). For instance, initial demographic questions were structured, requesting specific data from all university lawyers. The remaining questions were more open ended, with follow-up questions, as well as prompts and probes derived from handwritten notes. A separate interview guide (Cameron, 2016, Appendix D) was kept for each university lawyer to ensure consistency and rigor in the interview process.

Ethics Approval

The ethics approval process was integral to formalizing the interview process and how the data would be represented in the case study. The case study design formed part of a variation (subsequently approved) to the original host university ethics approval for the survey. Consistent with the fixed and emergent elements of the mixed methods design, interviews were foreshadowed in the original ethics application, but the key components of the case study design only emerged following an interpretation of the survey findings. The primary issues associated with ethics approval were anonymity and confidentiality. A number of safeguards were employed to minimize the risk of identification, and were outlined in a participant information and consent form provided to participants when they were invited to participate in the study (see Cameron, 2016, Appendix E). De-identification occurred at a number of stages during data collection and analysis: in the interview when participants did their own de-identifying; on participant review of the interview transcript; in the case study write up and then by the participants in the review of their responses in the case study. Member checking, a strategy to support the validity of the research, was also used to promote anonymity and confidentiality. University lawyers were being asked to disclose potentially sensitive information about their experiences with legal risk and risk management. Identification of the university lawyer, or their university, with a legal issue may have negatively impacted both parties.
Pilot Study

A pilot study of four university lawyers was conducted in order to validate and strengthen the interview design. As Merriam argues:

The key to getting good data from interviewing is to ask good questions; asking good questions takes practice. Pilot interviews are crucial for trying out your questions. Not only do you get some practice in interviewing, but you also quickly learn which questions are confusing and need rewording, which questions yield useless data, and which questions, suggested by your respondents, you should have thought to include in the first place. (Merriam, 2009, p.95)

Interviews were stopped at various points to seek participant feedback on the interview definitions and questions. Interview questions were also added, deleted, modified and tested throughout the pilot study.

Case Selection

Purposive sampling is a common strategy for selecting case study participants (Bryman, 2012; Creswell, 2013). The primary criterion for case selection is cases that can yield the “best data” (Yin, 2009, p.91) and “maximize what we can learn” (Stake, 1995, p. 4) about the phenomenon being studied. Consistent with purposive sampling, the author imposed two conditions on case selection: university lawyers had to possess experience in delivering legal services to WIL programs; and a minimum two years’ experience as a university lawyer. It was assumed that university lawyers with lengthier periods of service would have more experience with WIL programs and hence provide richer descriptions of their experiences. In the interest of yielding the ‘best data’, a number of cases were selected based on the recommendations of ‘insiders’. In the present study, insiders were well connected with university lawyers, who they considered would have a good understanding of risk management in the particular context of WIL programs. Insiders also saved the author time and resources in case selection.

Maximal variation sampling supports case selection by exploring multiple perspectives that may promote a comprehensive understanding of the phenomenon being studied (Creswell, 2008). In the quest to explore risk management pertaining to WIL programs, university lawyers were selected from multiple sites and stratified according to the following demographic characteristics: university lawyer length of experience and position; location of primary university site; university type; and size of legal office (total number). A case typology was maintained throughout the selection process to keep track of these characteristics and to ensure balance and variety in case selection (Stake, 2000).

Collection of Interview and Other Data

The data collected for the case study is summarized at Table 1. The in-person interview was the predominant data collection method for practical reasons, with the e-mail communications and documents supporting the interview data. To observe university lawyers’ work, a significant proportion of which does not relate to WIL programs, or to access legal office files (documents) involving WIL-related matters, would have been time consuming, costly and raised issues concerning confidentiality and legal professional privilege. In-person interviews were preferred, rather than telephone and video interviews, primarily due to the author’s belief that taking the time to travel to university sites demonstrated a genuine interest in the work of university lawyers and would strengthen relationships with them. Building rapport was critical in gaining both the rich descriptive data sought and the continuing participation of university lawyers following the interview (member checking, follow up e-mails and review of transcripts).
Data Analysis

The general data analytic technique employed in multiple case study research is inductive and comparative (refer Creswell, 2013, Merriam, 2009, and Stake, 1995). Being a multiple case study, the researcher draws general conclusions, known as assertions, from analyzing the specific data from each case (within-case analysis), and then compares the data derived from each case (cross-case analysis) (Creswell, 2013; Merriam, 2009). The assertions represent the general lessons learnt about the research topic by studying the cases (Creswell, 2013). During the WIL research, the qualitative data were analyzed in four stages: initial reflexivity, eclectic coding (Saldana, 2013), pattern coding (Miles & Huberman, 1994), and data representation.

Initial reflexivity

Initial reflexivity involves reflection on the interview itself, with notes taken during the interview and the initial reflections stored in analytic memos. NVivo software facilitated the data analysis by storing and organizing the qualitative data, analytic memos, codes and relationships in one location. Four analytic memos were established and used throughout all stages of data analysis. First, there was a reflexivity memo for each case, which documented and reflected upon a range of matters pertaining to the interview, such as: the interview environment; interview questions and technique; potential follow up questions and document requests for the participant; lessons learnt from the interview; and potential codes, categories, themes and assertions. A second analytic memo included all other observations and notes related to the WIL research, including code maps, interview design and interview process. A third analytic memo, interview lessons, collated the lessons learnt about each interview from the reflexivity analytic memo, and was used as a review tool prior to each interview. The final analytic memo entitled coding process documented all the decisions made by the author about deleting, adding, moving or modifying codes, as well as providing step-by-step instructions for the coding process. This analytic memo provided an audit trail which supported the validity of the research.

Eclectic coding

Eclectic coding involves a mix of various coding strategies to create an initial code map (Saldana, 2013). The coding strategies applied in the WIL research included: structural, descriptive, attribute, in vivo, versus, simultaneous and sub-coding. A code is a word or short phrase that symbolically assigns a meaningful attribute for a portion of data (Saldana, 2013). Each code has an operational definition, which is subject to change during eclectic coding. The structural codes are pre-determined codes, which in the WIL research, were aligned with the research and interview questions. Structural codes are examples of what Maxwell (2013) describes as “organizational categories”. Their primary function is “as bins for sorting data for further analysis” (Maxwell, 2013, p. 107). The structural codes are a precursor to more intensive coding of the data within each structural code.

In the WIL research, the data was first assigned to a structural code. The one structural code was attributed to a large segment of data. For example, the interview question and answer from a transcript, once reviewed and corrected by the participant, was assigned to one or more structural codes. That data was then further coded using simultaneous, attribute, in vivo, versus and descriptive techniques (Saldana, 2013), with the resultant codes placed under the structural code (thereby creating sub-codes). The resultant code was an existing code; a new code; or led to the replacement or modification of a code title or operational definition of an existing code.

Another technique employed during eclectic coding was identifying potential relationships between codes within the same segment of data. Relevant data was assigned to a code–code relationship. These relationships were designed to facilitate broader category, theme and assertion generation, in order to
answer the research questions and to improve the quality of the case study write up. The more data sources coded to a relationship, the stronger the case for the codes to represent a category or theme in the case study and for that relationship to be represented in the case study write up.

**Pattern coding**

Pattern coding is used to develop categories from the structural codes and sub-codes (Miles & Huberman, 1994). The pattern codes represent the categories and sub-categories relevant to the research questions. Pattern coding is a form of “categorical aggregation”, namely “the aggregation of instances until something can be said about them as a class” (Stake, 1995, p.74). The final product of pattern coding is a conceptual model comprising sub-codes, codes, sub-categories, categories, themes and assertions for each research question (see Cameron, 2016, Appendix H). In the WIL research, themes were generated by identifying relationships among and comparing categories and sub-categories from the structural codes, with the categories and themes combined into assertions.

**Data representation**

The categories and sub-categories in the conceptual model were presented as headings and sub-headings in the case study. The data from each research participant was aggregated and presented as a cross-case analysis, with the information from each individual case dispersed throughout the case study (Yin, 2009). This form of data representation is consistent with an instrumental multiple case study, as the researcher intends on furthering understanding about the problem (in the WIL research, risk management in WIL programs), as opposed to possessing an intrinsic interest in understanding each case (university lawyers). If the WIL research was an intrinsic case study, the data would have been presented as a series of individual case studies.

**VALIDATION STRATEGIES**

Validation is the employment of accepted strategies to document and promote the ‘accuracy’ of a study (Creswell, 2013; Merriam, 2009). There are eight strategies for validation recommended by Merriam (2009) and Creswell and Miller (2000). Seven of the eight strategies were employed during the quantitative and qualitative phases of the WIL research to promote the validity of the mixed methods study, including peer review (conducted by the author’s thesis supervisors); sampling (discussed above); triangulation; member checking; reflexivity; rich description; audit trail; and adequate engagement in data collection. The eighth strategy - external audit - was discounted on the basis of time and financial cost.

**Triangulation**

Triangulation of the data can occur using multiple research methods, sources of data and data collection methods to strengthen the research findings (Creswell & Plano Clark, 2011; Merriam, 2009; Yin, 2009). Relevant data from the survey research was triangulated with qualitative data in the case study findings (method). Further, interviews with multiple university lawyers (sources of data) generated transcripts as well as e-mail communications and documents used to clarify, expand and support the interview data. The various data sources and types were then combined during the cross-case analysis in the case study (data collection).

**Member Checking**

Member checking enables research participants to confirm the accuracy of the qualitative data. For example, university lawyers were given the opportunity to check the interview transcript(s) for any errors, as well as the accounts, extracts, descriptions and quotes attributable to them in the case study,
for the purposes of protecting anonymity, and to correct any misinterpretations (if any) of their responses.

**Reflexivity**

Reflexivity requires the researcher to reflect on their background, past experiences, decisions, assumptions, values and biases that may impact the research (Merriam, 2009). The author articulated and reflected on these matters throughout the mixed methods study, in particular during the data analysis phase of the case study (refer to initial reflexivity above).

**Rich Description**

A rich description should enable a reader, in the same population as the research participant, to determine whether the findings can be transferred to their situation (Merriam, 2009). The case study was the dominant strand of the mixed methods design, providing a rich description of university lawyer experiences with risk management as it related to WIL programs. This rich description should enable university lawyers in Australia and overseas to assess the transferability of the research findings to their circumstances, thereby supporting the validity of the WIL research.

**Audit Trail**

The road map (Figure 1) and associated description in this article provides a summary example of an audit trail. An audit trail enables a person to examine and uphold the ‘accuracy’ of the research. The WIL research has a comprehensive audit trail. All aspects of the qualitative data and analysis is stored by NVivo software, with the survey instrument and related documents locked in filing cabinets.

**Adequate Engagement in Data Collection**

Adequate time needs to be spent in interviewing research participants and collecting relevant documents such that the data becomes ‘saturated’ (Merriam, 2009). With the WIL research, 13 in-person interviews of between one and two hours’ duration were conducted in multiple locations across 12 universities.

**CONCLUSION: LESSONS FOR WORK-INTEGRATED LEARNING RESEARCHERS**

University lawyers were analyzed through both quantitative and qualitative lenses as part of a mixed methods research design, the evolution of which is described in this article. There were three particular limitations associated with the mixed methods design that provide important lessons for WIL researchers: social desirability bias; author bias; and use of the term work-integrated learning. With social desirability bias, participants may tend to over-inflate or over-emphasize positive experiences and downplay or not disclose negative experiences with WIL as to do otherwise may negatively impact them and the university. To minimize this risk, the author assured participants, in the survey instrument and at the beginning of the interview, that their responses were strictly confidential and would be de-identified, that the benefits of the research could only be realized by correct information, and that there were no right or wrong answers to the questions. Accurate responses were also sought by using clarification and expansion interview questions, the most important of which was “can you provide me with an example?”

A second limitation relates to the inherent bias of the WIL researcher in mixed methods research. A series of decisions during data collection and analysis need to be made about the construction of
categories and themes, data that warrants further investigation as well as the data to report in the case study. These decisions are influenced by the WIL researcher’s background, past experiences, decisions, assumptions, values and biases. Due to the richness of the data, not all the data is included in the final output (e.g., thesis, book chapter or journal article). This raises a critical question for the reader: what is the basis for the researcher’s selection and rejection of data? The validation strategies reported in this article can be used to minimize bias and improve the reliability of a mixed methods study.

The third limitation relates to the research participants’ understanding of WIL. Some university lawyers, as observed during the interviews and when administering the survey, did not distinguish WIL from work experience. Some university lawyers acknowledged that WIL was a concept foreign to them and used other terms to describe WIL which the author could easily identify with such as clinical placement and practicum. WIL researchers should be mindful of the term WIL being a potential source of confusion, and take steps in their research design to clarify its meaning. Any confusion may lead to research participants providing data about work experience (and other work-based programs) that do not incorporate WIL. This may lead to WIL researchers spending precious research time distinguishing WIL and work experience during data analysis, and potentially relying on incorrect data when presenting their findings, thereby undermining the validity of the WIL research. To address this weakness in the case study, the author provided a definition of WIL to participants prior to and at the beginning of the interview (refer Cameron, 2016, pp. 89-90), and noted other common terms used by academic disciplines to describe WIL such as internships, service learning, placement, cooperative education, sandwich courses, clinical programs, fieldwork and practicum. The author also asked clarification questions during the interview using two key components of the WIL definition - curriculum design and real work settings – to ensure that the university lawyer’s experience related to a WIL program.

Overall, it is envisaged that these lessons, along with the road map of a mixed methods design provided in this article, can assist WIL researchers on a mixed methods journey. An essential part of this journey is articulating a rationale for undertaking mixed methods research. WIL researchers must convince the reader that there is a purpose for conducting, and then mixing, two separate research methods. The author’s WIL demonstrated that mixed methods can be applied for developmental purposes. The findings from the survey research were used to inform the development of the case study, and the data from both methods were triangulated to strengthen the research findings.

REFERENCES


