

# Using Insider Action Research in the Study of Digital Entrepreneurial Processes: A Pragmatic Design Choice

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**Abstract:** The field of entrepreneurship is yet to exhaust the gamut of qualitative design choices for use in researching the entrepreneurial process. For this reason, this paper proposes that insider action research (IAR), with its iterative, immersive and emergent form of inquiry, presents a pragmatic design choice for understanding the nature of uncertainty surrounding the digital entrepreneurial process. Since entrepreneurship in the digital context is a highly dynamic and fluid process, IAR appears well-suited for use in researching the phenomenon. Yet, the paucity of its application in entrepreneurship research, and less so in the emerging digital space, is rather puzzling. Thus, using a real time case study of a new venture creation process in the e-learning sector, this paper contributes by elucidating how this mode of inquiry might be set up and applied in digital entrepreneurship experimentation. Even though the longitudinal study at hand is still unfolding, the completion of two IAR cycles serves to demonstrate how a symbiotic interweaving of new venture creation and new knowledge production can provide the basis for extracting valuable insights about the digital entrepreneurial process.

**Keywords:** insider action research, researching entrepreneurship, digital entrepreneurship

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## 1. Introduction

Entrepreneurship research appears to be coalescing around core themes, unified by the study of the *phenomenon* – i.e., the process of emergence of new economic activity (Wiklund et al., 2011). This process is often described in terms of uncertainty (Knight, 1921; McMullen & Shepherd, 2006), non-linearity and unpredictability (Saravathy, 2001, 2008). Thus, it requires ‘continual adjustments by actors’ (Garud & Giuliani, 2013), who learn and hone their capabilities through a range of situational influences (Kempster & Cope, 2010) and experimentation (Kerr et al., 2014).

In the digital context, Nambisan (2016) notes that the dynamic and fluid boundaries of innovation and entrepreneurial processes, dictate the use of methodological approaches that reflect the incremental and nonlinear paths that digital artifacts and platforms facilitate in entrepreneurial initiatives. Following this argument, this paper proposes that insider action research (IAR), with its emergent and iterative mode of inquiry (Shani & Pasmore, 1985; Reason & Bradbury, 2008) presents an intuitive design choice for producing knowledge within this context. Yet, despite its potential to illuminate our understanding of the entrepreneurial process, the paucity of use is rather puzzling.

Therefore, using a longitudinal real time case of a digital start-up process in the e-learning industry, this paper serves to elucidate how this form of inquiry might be applied in continual experimentation with the digital entrepreneurial process, while producing new knowledge as a scholarly outcome. As such, in a dual role, the researcher as entrepreneur, initiates a digital start-up that provides the vehicle for applying and critiquing a host of entrepreneurship and innovation management perspectives and practices. In a collaborative effort involving a Dutch gaming company, a web developer and actors sourced from digital talent platforms, the study enacts a realistic digital entrepreneurial process as core project, which enjoys a symbiotic relationship with the academic project of knowledge production.

Since the research is still unfolding, results at the moment are only tentative. However, as the first and second IAR cycles indicate, managing uncertainty in the digital entrepreneurial process appears to lend itself to an eclectic mix of causal, bricolage (Baker & Nelson, 2005) and effectual logic (Saravathy, 2001); alongside multiple innovation and entrepreneurship principles and practices such as the Lean Startup (Ries, 2011, Blank, 2013). Under conditions of extreme uncertainty, decision making appeared to be greatly influenced by bricolage and effectual logic. However, as effectual cognition facilitated new knowledge acquisition in the entrepreneurial process, newly acquired knowledge became the basis for a transition to more predictive sub-processes, as uncertainty is reduced.

This paper is organised as follows. First, it draws on current debates in entrepreneurship research to underscore the rationale for adopting an IAR mode of inquiry. In so doing, it highlights the call for entrepreneurship research that adopts methodological sophistication, unique to researching the dynamic and non-linear entrepreneurial process (Bygrave, 2007). Next, it explores relevant literature on AR and the subcategory of IAR, while simultaneously establishing its suitability for experimenting with the digital start-up process. Finally, it illustrates how IAR is being applied in a live longitudinal entrepreneurship experimentation process.

## **2. Researching Entrepreneurship**

Entrepreneurship theories draw from diverse disciplines, with their corresponding epistemic traditions. While the multidisciplinary character of the field has contributed to a vibrant discipline (Audretsch, 2012); it has also resulted in fragmented and non-cumulative knowledge development (Fiet, 2001), with some incompatibility in the methods used to conduct research (Chandler & Lyon, 2001). This increased fragmentation has prompted different responses from the scholarly community about how knowledge might be produced in the field.

### **2.1 Debating Entrepreneurship Research**

Pittaway (2012) identifies and categorises two broad groups in the entrepreneurship research debate. The first group seeks to define the subject more narrowly, thereby consolidating (Shane & Venkantaraman, 2000) and/or excluding certain types of research (Low, 2001). This group leans towards positivistic paradigms to seek expansive theories that integrate much thinking into a coherent whole. Meanwhile, the second group echoes both pragmatist and interpretivist perspectives; and considers the diversity in thinking to be a positive outcome of entrepreneurship studies (Gartner, 2007). Diversity, they argue, leads to very different forms of acceptable knowing and knowledge construction (Grant & Perren, 2002; Pittaway, 2005).

Despite differing perspectives, there appears to be a consensus on several issues facing entrepreneurship research. For one, most scholars seem to agree that entrepreneurship is an evolving discipline and need not be researched purely as part of established sciences (Simon, 1996). For instance, Zahra and Dess (2001) argue that entrepreneurship cannot be too paradigm driven, as that would kill the energy that makes the field vibrant. There is also unanimity in Gartner's (1988) argument that entrepreneurship cannot lose sight of the phenomenon it seeks to study. As such, research needs to encompass the study of processes of emergence of new economic ventures (complete or incomplete) across various organisational contexts (Davidsson, 2016: 35).

The above views echo Bygrave's (2007) repeated call for entrepreneurship research involving methodological sophistication germane to studying the phenomenon. As such, he insists that because entrepreneurship begins with an act of human volition and unfolds in a disjointed, discontinuous, and non-linear manner; it does not lend itself to methods designed for smooth, continuous and linear processes.

### **2.2 Rigour vs. Relevance**

The entrepreneurship research debate can also be framed within the broader rigour versus relevance discourse; which was partly engineered by Susman and Evered's (1978; 585) observation that findings in scholarly management journals only remotely related to the real world of practising managers. To bridge the gap between theory and practice, Gibbons et al. (1994) proposed Mode 2 knowledge production.

Unlike traditional Mode 1 research, which sets and solves problems in a context governed by academic interests of a specific community, Mode 2 research produces knowledge within a context of application (Starkey & Madan, 2001). It seeks to overcome the concerns of the practitioner community by producing knowledge which is based on academic rigour, yet holds relevance to practitioners (Starkey & Transfield, 1998: 14). For this reason, Starkey and Transfield argue that 'the ability to develop ideas and relate them to practice should be the distinguishing competence of the skilled management researcher.'

Mode 2 research, such as IAR, is therefore born out of some of the limitations of traditional research approaches, especially those that rely heavily on backcasting. As cognitive psychologists point out, human memory is constructive, with the result being selective recall and retrospective and hindsight biases (Anderson, 1990). As such, traditional research designs which mainly rely on data collection techniques such as

in-depth interviews or surveys, risk producing knowledge that misidentifies causality in the entrepreneurial process, which only an immersive experience might uncover (Read, Sarasvathy, Dew & Wiltbank, 2016).

However, at this juncture, it is important to underscore that the intent in identifying some of the limitations of Mode 1 research, is neither designed to deny its many merits; nor is it meant to suggest that one design choice is superior to the other. In fact, it will often be the case that a researcher's design choice is predicated on subject matter and situational constraints (Easterby-Smith et al., 2015).

Nonetheless, since entrepreneurship is often cast as pragmatic science (Drucker, 1985; Rasmussen & Sørheim, 2006), the need to produce actionable knowledge (Argyris, 1996), using concrete research, cannot be over-emphasised. Aldrich and Martinez (2001; 51) concur by stating that entrepreneurship research needs to move beyond conceptual integration and attempt to replicate concepts in concrete empirical research.

Likewise, Landström et al. (2016: 10-11) summarise the foregoing practice-based arguments, by stating that like real world entrepreneurs, entrepreneurship research needs to adopt the same 'down to earth,' actionable and pluralistic view of entrepreneurship; by employing epistemological and methodological inspiration from pragmatic philosophy, and a wide range of traditions.

Digital entrepreneurship, which has only very recently received an agenda-setting first entry in entrepreneurship's top journal (ET&P), is in need of appropriate methodologies for studying the phenomenon (Nambisan, 2016). Given the current interest, the time may be right for identifying design choices that cater to highly dynamic and fluid digital entrepreneurial processes. As such, a closer examination and adoption of AR and IAR for use in real time entrepreneurship experimentation presents a worthwhile undertaking.

### 3. Action Research (AR) – An Overview

#### 3.1 Definition

AR is an umbrella term for a family of practices (Reason & Bradbury, 2008: 1), united by a Lewinian (Lewin, 1946) origin, with each modality having its own distinctive emphasis (Raelin, 2009; Coghlan, 2010a, 2011; Bradbury, 2015). Given the multimodal and interdisciplinary nature of this design choice, definitions tend to be varied and discipline specific. Within organisational sciences, however, AR is commonly defined as:

*... an emergent and iterative process of inquiry that is designed to develop solutions to real organisational problems through a participative and collaborative approach, which uses different forms of knowledge, and which will have implications for participants and the organisation beyond the research* (Shani & Pasmore, 1985; Reason & Bradbury, 2008).

#### 3.2 Modalities

In developing solutions to real organisational problems, various modalities of AR can be mixed and matched as circumstances dictate (Coghlan & Brannick, 2014). *Participatory AR* has a focus outside of the organisational context and seeks to empower people to construct and use their own knowledge (Lykes and Mallona, 2008); while *Action Learning* focuses on the development of people in an organisation, and uses tasks as a vehicle for learning (Revas, 1982; Pedler, 2011). With *Appreciative Inquiry*, the emphasis is on large system change through an appreciative focus on what already works in a system than what is deficient (Reed, 2006). Meanwhile, *Clinical Inquiry* is based on the notion that deeper and more valid information can grow from AR if researchers base their inquiry on clients' needs; and if they focus on being helpful (Schein, 1995, 2006). *Cooperative Inquiry* involves a modality of AR where all participants work together in an inquiry group as co-researchers and co-subjects (Reason and Heron, 1986; Heron and Reason, 2008); and *Reflective Practice*, is a form of first-person inquiry which refers to how individuals engage in critical reflection on their own action (Schon, 1984). This family of practices is in many ways, different from conventional Mode 1 research.

#### 3.3 Action Research vs. Conventional Research

To gain a fuller appreciation for AR, a comparison against conventional or traditional research is of essence. Traditional research is used here in its broadest sense to denote research that mostly draws from well-established positivistic paradigms. The table below summarises some of the core differences.

**Table 1:** Differences between Conventional & AR

Basis	Conventional Research - (Mode 1)	Action Research -(Mode 2)
<b>Purpose; Power</b>	To understand; Researches 'on' – 3rd person inquiry	To understand & improve; Researches 'with' – 3 Voices (1 <sup>st</sup> , 2 <sup>nd</sup> & 3 <sup>rd</sup> person inquiry)
<b>Researcher</b>	External to context	Embedded with research
<b>Evidence</b>	Qualitative & quantitative	Experiential, emergent, partial, dialogic, intuitive, qualitative & quantitative
<b>Strengths</b>	Weights variables into deterministic sets & seeks generalisability	Addresses complex contexts where systems activities are governed by political-pragmatic realities
<b>Weaknesses</b>	Commitment to objectivity may render it armchair speculation – possibly inactionable & potentially misleading	Many positive outcomes cannot be easily summarised quantitatively; to those not familiar, it appears lacking in objectivity
<b>Benefits</b>	Serves academic community & may exploit participants as objects	Builds problem-solving and learning competencies in communities, groups and organisations

Source: Adapted from Bradbury (2015: 2)

Given the differences, AR has its own unique set of rules for judging quality. Bradbury (2015:8) identifies the following seven pillars of good AR:

1. *Articulation of objectives* - (i.e. the extent to which the AR project addresses its objectives)
2. *Partnership & participation* - (i.e. the extent to which it reflects participative values, such as consultation with stakeholders)
3. *Contribution to AR theory-practice* - (i.e. the extent to which it contributes to a wider body of theory and/or practice)
4. *Appropriate methods & process* - (i.e. the extent to which appropriate methods are clearly articulated and illustrated; analysis must include the voices of participants)
5. *Actionability* - (i.e. extent to which AR provides new ideas which guide action in line with need)
6. *Reflexivity* - (i.e. extent to which the researcher acknowledges self-location as a change agent; whereby self-location means taking a personal, involved and self-critical stance in the process)
7. *Significance* - (i.e. having relevance beyond the immediate context of the AR project)

### 3.4 Philosophical Underpinnings of AR

The basis for adopting AR and its corresponding quality assessment criteria, is grounded in solid ontological and epistemological meta-theories. While AR may be associated with a continuum of philosophical traditions, Herr and Anderson (2005) identify critical realism (CR) and pragmatism as being recurrent in underpinning knowing in action (Johansson & Lindhult, 2008; Coghlan & Brannick, 2014: 45).

#### 3.4.1 Critical Realism.

CR, as Burgoyne (2011) explains, presents a middle ground philosophy between the extremes of positivism and interpretivism. It develops a qualitative theory of causality by avoiding some of the pitfalls of empiricist theories, as embodied by direct realism and positivism (Roberts, 2014). For this reason, critical realists such as Bhaskar (1975) maintain that reality is stratified into the empirical, the actual and the real. The empirical represents events that are observed or experienced; the actual, constitutes events and non-events which come about as a result of the real, while the real represents causal or generative structures and mechanisms with lasting properties.

Therefore, given the stratified nature of reality, the researcher must deep-dive in critical reflection, to probe and understand the underlying structures and mechanisms that give rise to observed phenomena (Bhaskar, 1989). Since CR raises questions about the preconditions for social phenomena, Blundel (2007) posits that it is well placed to frame and investigate into contextual and process issues in entrepreneurship.

Critical realist knowing involves a four-step process of experiencing, understanding, judgement and decision on action (Lonergan, 1992; Flanagan, 1997); whereby, we start by experiencing; then, using inferencing techniques such as abduction and retroduction, we reason backwards to question our experience (Danermark et al., 1979; Sayer, 1992:107; Danermark, 2002; Reed, 2005). In so doing, we discover or gain understanding. Upon our understanding, we make a judgement. Through this process, we discern the underlying causal

mechanisms and structures that give rise to qualitatively observed phenomena. Finally, based on our judgement, we might take action.

As Johansson and Lindhult note, the critical realist orientation of AR ‘focuses on reflective activity, in order to articulate, develop and validate knowledge, and support emancipation of minds.’ It allows researchers to be part of a study, yet maintain distance from it. AR mostly derives its rigour from a critical realist orientation.

### 3.4.2 Pragmatism.

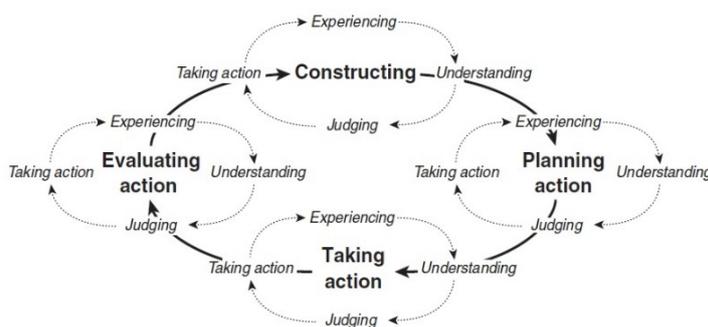
Pragmatism and CR, thus combine to provide the basis for quality in most AR projects. Whereby, CR emphasises the process of knowing; while pragmatism helps to combine theory and practice, by employing experimentation in practice and conceptualisation as a desirable approach to developing new knowledge and improving practice.

Given the widespread adoption of CR and pragmatism in entrepreneurship research, the idea of researching the entrepreneurial process using AR is not far-fetched.

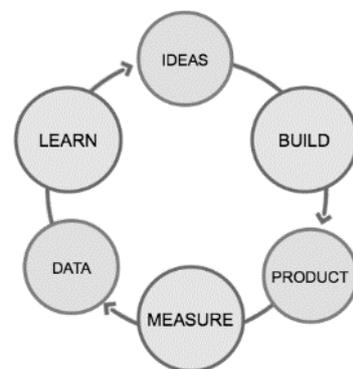
## 3.5 Why Action Research the Entrepreneurial Process

The AR *process* is both emergent and iterative. It begins within a context and works through several cycles, with the possibility for a change in direction as the research unfolds. Each cycle starts with diagnosing of issues, followed by planning, taking and evaluating action. A decision on actions for the next cycle is usually informed by knowledge gained from evaluating the previous one. Similarly, the entrepreneurial process is ‘a phenomenon in a state of constant flux, shaped by the behaviour of entrepreneurs whose responses to perceived opportunities may be highly difficult to predict’ (Neergaard & Ulhøi, 2007:1).

By juxtaposing the AR process (see Figures 1) and pragmatic entrepreneurial process models (see Figure 2) such as the Lean Startup (Ries, 2011:75), Design Thinking (Brown & Katz, 2011) and effectuation (Sarasvathy, 2001, 2008), methodological similarities begin to emerge. Thus, AR empowers scholars and scholar-practitioners to naturalistically experiment with, and document the entrepreneurial process in real time. Researchers can envisage several scenarios in which AR processes become seamlessly woven into entrepreneurial processes, in symbiotic relationships of new venture creation and new knowledge production.



**Figure 1:** Action Research Method  
Source: Coghlan and Brannick (2014: 30)



**Figure 2:** Lean Startup  
Source: Ries (2011: 75)

With relation to participation, AR is a social process in which the researcher is embedded (Bradbury & Reason, 2003), and collaborates with members of an organisation as a facilitator, to better their situation (Greenwood & Levin, 2007). As Heron and Reason (2006) observe, AR is research ‘with’ rather than ‘on’ people. Similarly, most entrepreneurial ventures are the result of teams (Cooney, 2005) or a loose coupling of actors called ‘collectives’ (Nambisan, 2016), engaging in immersive and high-performing experiences, to co-create successful ventures within affordable means; and stakeholders who self-select into the process (Read et al., 2016).

Further, AR also encourages the use of different forms of *knowledge*, which may include abstract theoretical knowledge, experiential knowledge, and knowing-in-action (Reason, 2001). This approach to knowledge

production is incorporated into each stage and cycle of the AR process. It echoes the same pragmatic approach 'expert' entrepreneurs are observed to adopt in gaining knowledge during new venture creation processes.

The many similarities between the entrepreneurial process and the AR process, is the basis for the rather obscure but intriguing question - *Is entrepreneurship action research in disguise?* (Rasmussen & Nielsen, 2004). While the use of AR in entrepreneurship studies appears intuitive, only a handful of entrepreneurship scholars have taken up this mode of inquiry (Rasmussen & Sørheim, 2006; Leitch, 2007). Even rarer is the application of AR in hands-on experimentation with the entrepreneurial process.

Perhaps, the paucity of AR in real time entrepreneurship experimentation may be explained by a number of factors. First, the potentially taxing nature of the process may not always present a feasible option for researchers within academic institutions. Likewise, there is a general tendency for top journals to favour large positivist studies (Chandler & Lyon, 2001). Further, being a relatively young discipline, the field of entrepreneurship is yet to exhaust the gamut of qualitative research methodologies which may provide novel perspectives on the entrepreneurship phenomenon.

## **4. Insider Action Research**

### **4.1 Overview**

While the previous section serves to provide a generic basis for using AR in researching entrepreneurship, Insider Action Research (IAR) is probably most suitable for use in real time entrepreneurship experimentation. Best described as research in 'the swampy lowlands' (Schon, 1995), IAR is a unique form of inquiry which involves conducting research in the organisation or community in which one is employed or a member - such as a start-up organisation. It emerges from a mixture of organisational AR modalities and gains integrity by integrating first, second and third person inquiry. As such, the process involves high vulnerability, amongst other challenges (Coghlan, 2007; Coghlan & Brannick, 2014).

A complete theory of the IAR process, as Shani and Pasmore (1985) envisage, consists of four main factors - *context, quality of relationships, quality of the AR process* and *outcomes*. Factors surrounding context, affect the readiness and capability for participating in AR. Environmental factors in the global and local economies provide the larger context in which AR takes place.

The quality of relation between researcher and members is paramount; and, therefore, it needs to be managed through trust, concern for others and equality of influence. The IAR process itself needs to be rooted in a dual focus on both the inquiry process and the entrepreneurial process. Finally, outcomes of AR need to have a dual function of developing self-help competencies out of the action, and the creation of new knowledge (Coghlan & Shani, 2014; Coghlan & Brannick, 2014: 5-6).

Björkman and Sundgren (2005) describe IAR as a form of political entrepreneurship where researchers exploit learning opportunities within their organisations. Political entrepreneurs, as Buchanan and Badham (1999) note, operate within an organisation, combining a flexible number of skills while enabling activities such as intervention in political processes, coping with resistance, and promoting credibility in order to reach objectives.

One reason IAR presents a feasible option in experimenting with digital entrepreneurship, stems from the low barriers to entry made possible by enabling digital technologies (Porter, 2001) and a distributed system for innovation; thus, it allows researchers to set up real start-up organisations, against which they may affordably experiment with the entrepreneurial process, while gaining new insights that may lead to theory building, theory corroboration and/or modification.

### **4.2 Challenges & Countermeasures**

The immersive nature of IAR (Riordan, 1995; Cooke & Wolfram Cox, 2005) presents challenges, which mainly arise from being close to the problem under study. For this reason, Coghlan (2007) identifies preunderstanding, role duality and organisational politics as being the main issues researchers face when undertaking IAR.

*Preunderstanding*, as Gummesson (2007: 57) notes, refers to a person's knowledge, insights and experiences before they engage in a programme. It includes both explicit and tacit knowledge; which for the insider action researcher, can be beneficial, as well as detrimental to the study (Coghlan & Brannick, 2014: 133-134). Insider action researchers must guard against assuming too much, which tends to prevent critical examination. Ferguson and Ferguson (2001) warn against the danger of believing they fully know their own contexts when in fact their perspectives might only be partial and path dependent. Thus, the researcher is called upon to question their own assumptions and self-awareness using first person reflexive techniques such as reflective journaling, thought experiments, retroductive analysis and counterfactual thinking.

*Role duality*, which Williader and Styhre (2006) describe as being between academia and practice, can equally complicate the IAR process. This dual role can become overwhelming and confusing as the researcher is bound to experience 'competing commitments' (Kegan & Lahey, 2001); whereby, there is a higher degree of commitment to the core project (new venture creation in this case), but as an academic, a detached and neutral position is demanded. This conflict may lead to role detachment as the researcher begins to feel like an outsider in both roles (Adler & Adler, 1987).

*Organisational politics* presents yet another challenge, as it can undermine research and obstruct planned change. Coghlan (2007) observes that gaining access, using data, disseminating and publishing findings of IAR can be intensely political acts, which may also raise ethical concerns. As such, researchers need to be reasonable, intelligent, self-critical and responsible. An early awareness of these challenges is the first step in pre-empting and overcoming them.

## 5. Enacting the IAR Process

As part of the IAR process, this study has so far completed two cycles, which began with a pre-step that outlined the context and purpose of the study.

### 5.1 Pre-step: context & purpose

The pre-step in IAR, defines the context and purpose of the core project and the research project. Context in this study is multi-layered and includes the digital entrepreneurial context and the Irish national and academic contexts. These contexts, which often overlap, present affordances and constraints for carrying out the core IAR project.

The overarching purpose of the project was the creation of a new venture in the e-learning industry, as the basis for a continuous extraction of new knowledge. The new venture idea is a start-up, designed to support learning in K-12 (pre-university education) markets using cross-platform compatible games.

#### 5.1.1 Digital entrepreneurial context:

The process unfolds within the broader context of the global digital economy and the digital learning industry. Within this context, a technological disruption presents the external enabler (Davidsson, 2015, 2016) for coming up with the new venture idea. The entrepreneur has been embedded within this context for over ten years as portfolio digital entrepreneur; and draws from relevant prior knowledge, abilities and experiences, to identify, evaluate and develop the new venture idea.

This digital context presents challenges for conducting IAR, which mostly stem from the network-centric value creation processes brought about by digitisation. As Dymek (2008) notes, digital technologies shape the development of AR processes as they provide opportunities for collaboration, yet bring new challenges. Schein (2003) observes that the lack of body language and 'functional familiarity' threatens the quality of participation when undertaking AR with geographically dispersed agents. This study found that computer-mediated communication has the potential to increase the level of misunderstanding and uncertainty in the digital entrepreneurial process. To circumvent these challenges, communication technologies were later used interchangeably and concurrently to minimise misunderstanding in a two-tier layer of symmetric communication and follow-up asymmetric confirmation.

#### 5.1.2 Academic context:

The academic context of this study offers knowledge-based opportunities. The current venture under study is initiated by the researcher, who doubles as a portfolio digital entrepreneur in the e-learning industry. After a

fourteen-year hiatus from higher education, the entrepreneur returned to undertake a master's in entrepreneurship in his current institution. Upon completion of the programme, he came away with an improved understanding of how his fortuitous digital entrepreneurial journeys had unfolded. He then became intrigued by the idea of fusing academic research with real-world practice at the doctorate level. As such, the motivation for using the creation of a new start-up venture as a vehicle for entrepreneurship experimentation and self-improvement was born. Thus, borrowing from effectual logic (Sarasvathy, 2001) and other entrepreneurship perspectives and practices, the researcher founds and funds the realisation of the new venture idea.

### 5.1.3 Irish national context:

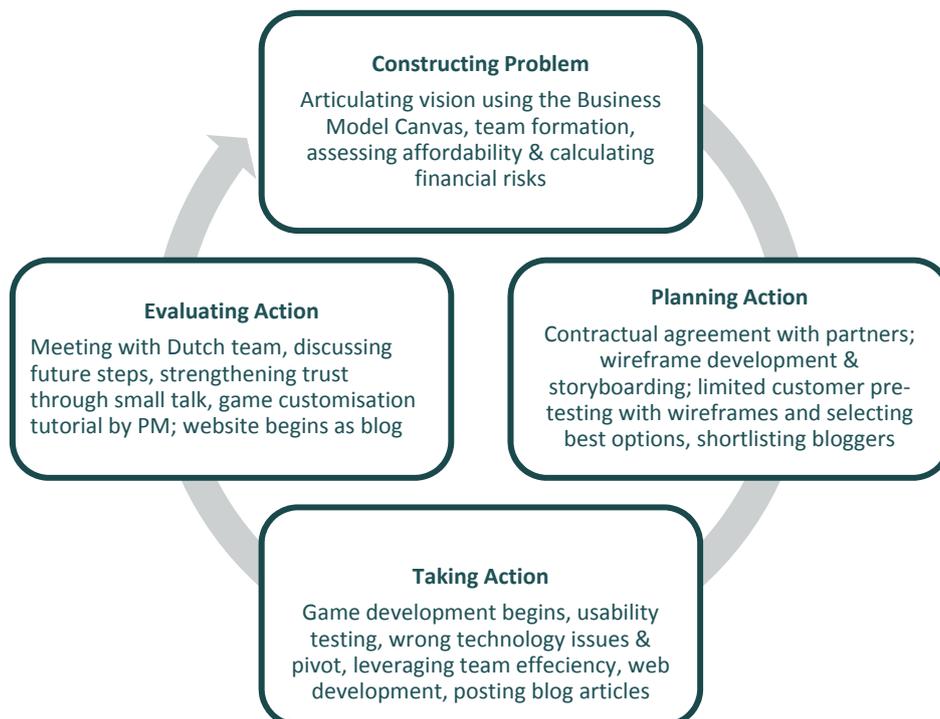
The academic context is embedded within the broader Irish national context. Within this context, the researcher is a non-EU citizen on a student residential visa. The researcher's status presents constraints at the level of setting up the venture as an Irish limited liability company – state polices prohibit non-EU nationals from establishing Irish limited liability companies, unless they commit to a huge upfront investment. With this limitation, the researcher was forced to register the venture as a Hong Kong company, while leaving open the possibility for scaling later within Ireland, if successful.

## 5.2 Main Steps - Stories & Outcomes

While documenting the experience in real time through reflective journaling, this study completed two IAR cycles and is in the middle of a third. The researcher's reflective notes provide essential data for retroductive and abductive analysis.

### 5.2.1 First IAR Cycle

While the complete IAR story and outcome is quite detailed, Figure 3 and the subsequent narrative provide a summary of how the first IAR cycle unfolded.



**Figure 3:** Summary of 1st IAR Cycle

### 5.2.2 Constructing the problem:

Using the Business Model Canvas (Osterwalder & Pigneur, 2010) as a planning tool, the entrepreneur started by articulating his vision for the new venture. He then proceeded to search and shortlist a cast of possible agents as collaborators and partners. Starting from his own network, he enlisted the services of his India-based web programmer, who agreed to develop the online learning platform.

Through LinkedIn, he found a Dutch gaming company that had experience building cross-platform compatible games, using HTML5 technology. The entrepreneur emailed a document to the founder of the Dutch firm, detailing requirements of the project; and raised awareness of its academic nature. The document became the basis for a Skype video meeting. During the meeting, the goal of developing four customisable game templates for use in e-learning game development was established.

A week after the meeting, the gaming firm returned with a quotation for the project which was unaffordable. However, by communicating the level of financial constraints, the Dutch firm devised a more affordable solution by reducing the number of required game templates to two, and removing 'nice-to-have' but unnecessary programming requirements. They saw the project as an opportunity to hone their skills on developing e-learning games, which was a new undertaking for them. The effectuation principle of 'affordable loss', mostly informed financial decision making by the entrepreneur.

### 5.2.3 *Planning action:*

With a contract signed, the project manager (PM) designated by the founder of the Dutch firm was introduced to the entrepreneur. Through Skype, the PM, the web developer and entrepreneur jointly discussed what was needed at key steps of game and web development. Next, the PM worked with his own team to produce wireframes and schematics which showed how the games would be programmed to work. The entrepreneur used the graphics to begin eliciting limited feedback from the expected target customer.

With details concluded, the entrepreneur went on to contract the services of two bloggers, who were tasked with writing articles relating to the future product. These articles were used to begin a digital marketing campaign. Specifically, it provided content which Google's search engines could begin indexing; and which early visitors could consume. As literature on digital marketing suggests, search engine rankings can be crucial to a digital venture's success. Factors such as domain authority and regular content updating are among important criteria search engines use for website ranking. Therefore, launching early and often, was adopted as a key digital marketing strategy.

### 5.2.4 *Taking action:*

After signing off on wireframes and schematics, game development began with intermittent Skype video meetings, email and text messaging. The game development process was running smoothly, until a miscommunication led to the wrong technology implementation. The error originated from using the wrong technology document. The entrepreneur took responsibility for the miscommunication and the process carried on. Owing to the error, the game templates would not end up capturing learning interactions on learning management systems as planned; and correcting the problem would lead to an unaffordable financial expense. Thus, the entrepreneur decided to effect a 'pivot' in revenue model and other aspects of the venture.

Meanwhile, in line with the bricolage principle of 'making do' with existing resources, the entrepreneur used extra space and bandwidth on one of his servers to create a temporary hosting account for the website. This allowed the web developer to go in and begin programming. The website began its journey as a blog, upon which articles were posted and indexed by search engines.

As game development was drawing to a close, the entrepreneur was impressed by the efficiency with which the Dutch team worked on the project. Riding on the momentum of the team, he leveraged it to conclude a contractual agreement to build an additional two new game templates for a fifty per cent discount. With the same efficiency, the Dutch team completed game development and delivered four game files in total.

### *Evaluating action:*

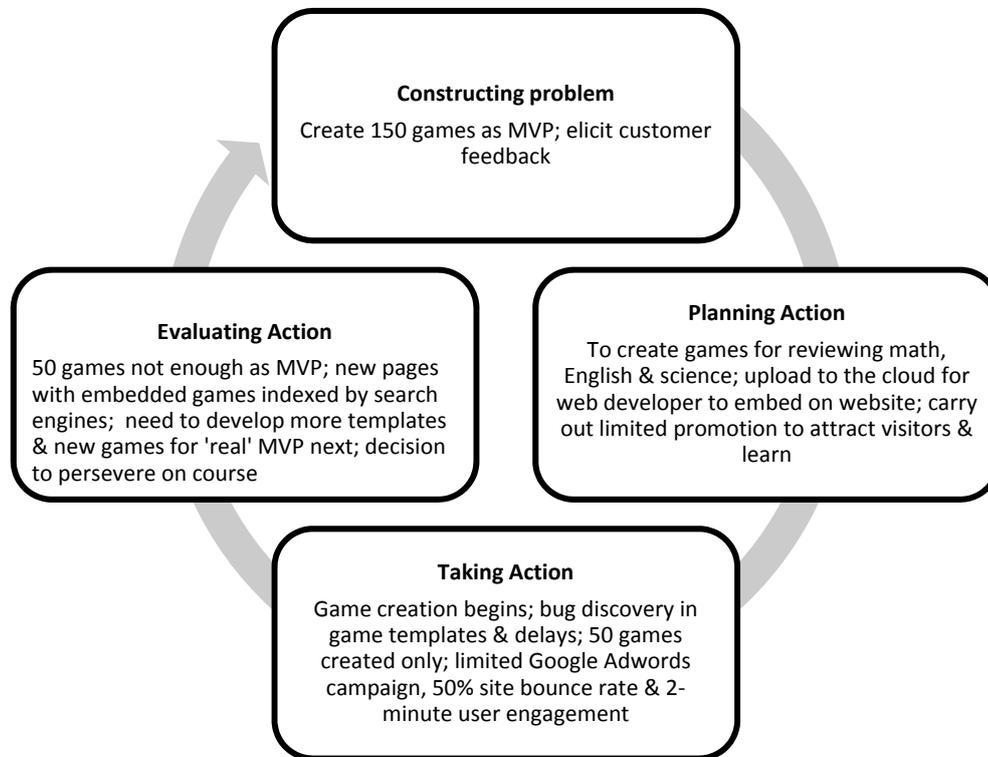
As this first IAR cycle was drawing to a close, the entrepreneur scheduled a Skype meeting with the founder of the Dutch company. The meeting was an in-depth interview designed to understand how the process unfolded behind the scenes with their own independent team members. This provided a major learning opportunity for the entrepreneur. The meeting revealed that more people had worked on the project than the entrepreneur realised; and it gave him an insight into the digital tools used for collaboration by the Dutch team.

The meeting switched to small talk as the entrepreneur got to learn about the Dutch founder's digital entrepreneurial journey. Interestingly, his formative journey bore the hallmarks of an effectual and bricolage process. The meeting helped to strengthen trust and mutual respect; and concluded with suggestions on how

future game development processes and outcomes might be enhanced. To conclude this cycle, the PM gave the entrepreneur a Skype video tutorial on code editing for game customisation, which enabled him to develop his very first learning activity from one of the templates.

5.2.5 *Second IAR Cycle*

A summary of the second IAR cycle is presented in Figure 4 and the brief description of events below.



**Figure 4:** Summary of 2<sup>nd</sup> IAR Cycle

5.2.6 *Constructing:*

The second IAR cycle was planned around the creation of 150 free e-learning games for the website as part of the MVP. The games would help students review math, English language and science topics. The entrepreneur would analyse incoming feedback from users as part of customer discovery, using Google Analytics.

5.2.7 *Planning action:*

The entrepreneur, who also has skills as a primary educator, would custom create learning activities; which would be uploaded to the cloud (Dropbox.com) with search engine descriptions for the web developer to embed on the website. After every five game activities were created, the entrepreneur would upload the files to the cloud. As games are created, a limited advertising campaign would be launched to attract a few early adopters. Bounce rate and time spent playing games would be among key performance metrics to analyse. With this understanding, the process began.

5.2.8 *Taking action:*

While creating games, the entrepreneur discovered bugs in the game templates which would end up stalling the project. As such, only fifty games were created out of those templates without bugs. The Dutch team was informed and began finding solutions.

Nevertheless, using Google Adwords, a limited promotional campaign was launched, with the goal of gauging user engagement with the fifty games. The results came back mixed. However, given the limited number of games and lack of variety in learning activities, the entrepreneur decided that the roughly fifty per cent bounce rate and two minutes of game engagement, suggested the project held promise. In addition, two early adopters had sent emails asking to use the game templates, while two schools had shared links to the games on their school websites. Overall, this was taken as a very positive validating signal.

### 5.2.9 Evaluating action:

Given the busy schedule of the Dutch team, it was a while before the templates were debugged. In the meantime, Google's search engines indexed all fifty pages within which new games were embedded. This IAR cycle concluded that a better MVP was needed to acquire a fuller profile of customer engagement. As such, the entrepreneur decided to develop new game templates and use the debugged templates for developing a 'real' MVP. This would later become the basis for the currently unfolding third IAR cycle.

### 5.3 Value of IAR

McMullen and Dimov (2013) are among many scholars who have called for process research in entrepreneurship. Despite the potential for such studies to offer a qualitatively distinct view of the field, those calls have largely gone unheeded. The use of AR in entrepreneurship research, which presents a suitable design choice for process research, is rather scarce. Even rarer, is the application of IAR in real time entrepreneurship experimentation. By using a live case in the digital entrepreneurship context, this study serves to illustrate how IAR may be implemented in longitudinal process studies of entrepreneurship. Only such studies may yield a more granular understanding of how entrepreneurial processes actually unfold. As evidenced by this study, IAR is well placed to produce knowledge that is novel, interesting and valued by a variety of audiences – practitioners and academics alike.

As a pioneering use of the methodology, this study offers future researchers insights on how to adopt this design choice for use in producing knowledge under various circumstances. Only such a research design may help energise the maturing field of entrepreneurship, which runs the risk of focusing on incremental research using 'normal science' designs (Landstrom et al., 2016: 2-3).

## 6. Findings & Conclusions

By elucidating how IAR can be utilised in an immersive longitudinal study of the digital entrepreneurial process, this paper contributes to the growing debate on how entrepreneurship at the intersection of digital technologies might best be qualitatively researched. Through an on-going case in the e-learning industry, the paper demonstrates compatibilities between IAR and the study of the digital entrepreneurial process.

As the study indicates, IAR seamlessly adapts to the fluidity of the digital entrepreneurial process, in symbiotic relationships of new venture creation and new knowledge production. In other words, IAR is a parallel process, which follows the contours of complexity in the digital entrepreneurial process; thereby making it a pragmatic research instrument for use in hands-on digital entrepreneurship experimentation.

Tentative findings suggest that although some form of planning is necessary, the digital entrepreneurial process never seems to fully succumb to a planned process because the future is simply unpredictable. As such, an overarching vision and limited short-term planning appears useful in providing direction for immediate action. This implies that digital entrepreneurs stay flexible, leverage contingencies and adjust to an ever-changing process; and an uncertain evolution of new venture initiatives. Therefore, the digital entrepreneurial process demands an eclectic mix of both causal and effectual logic, with effectual reasoning appearing to dominate. Effectual logic and bricolage seem to enable entrepreneurs to gain experiential knowledge under extreme uncertainty, which later informs the transition to more causal processes and sub processes.

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