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bricolage in a microcosm**

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Abstract

This study investigates students' use of causation, effectuation and bricolage behaviours within a fund-raising project that provided a microcosm of the entrepreneur's world. Such a pedagogical device allows us to explore when, and why, students use the various opportunity management behaviours over time. Although research has confirmed the use of these behaviours by expert entrepreneurs, how student entrepreneurs learn about them, and practice them, remains largely unexplored. Causation is the predominant focus for university teaching, yet our data reveal that student groups adopted all three behaviours at different stages of the fund-raising project as they responded to different contextual forces. The implications of our findings are that opportunity management theories should take a more prominent role in the higher education entrepreneurship curriculum. Educators also need to provide a better means of facilitating students to learn about, and practice, a greater repertoire of opportunity management behaviours than is currently the case.

Key words: opportunity management behaviours, entrepreneurship education, live projects, causation, effectuation, bricolage

Introduction

This paper explores when, and why, undergraduate entrepreneurship students on a business-management degree use the three different opportunity management (OM) behaviours of causation, effectuation and bricolage over time in a fund-raising project that is intended to be a microcosm of the challenges faced by entrepreneurs. Our ultimate aim is to expose the

contextual influences on students' behaviour in order to help educators facilitate students' learning about the appropriate use of the different opportunity management behaviours (Arend et al., 2015; Brettel et al., 2012; Chandler et al., 2011; Fisher 2012; Perry et al., 2012; Senyard, et al., 2015).

In this paper we use the term opportunity management rather than the more common opportunity recognition, discovery, or creation (Miller 2007; Alvarez and Barney, 2007) as it encompasses both the identification and conversion of a potential opportunity into something that is substantial. We are also aware that different authors have used the terms decision-making logics or cognitive logics (Reymen et al., 2016; Dutta and Thornhill 2014.) as well as behaviours (Fisher 2012; Sarasvathy 2001) to describe a combination of entrepreneurial intentions and behavioural outcomes. It is beyond the scope of this paper to disentangle these differences; instead we simply use the terms opportunity management behaviours to refer to both the cognitive underpinnings *and* actual causation, effectuation and bricolage behaviours.

The best way of preparing university students for entrepreneurial careers through providing the means for students to learn entrepreneurial skills has been the subject of energetic, and increasing, debate in a number of literatures (Fayolle, 2013; Gielnik et al., 2015). Historically causation has been presumed to be the default behavioural logic that entrepreneurs use, which is therefore taught to entrepreneurship students. Causation refers to where an entrepreneur decides on a predetermined goal and then selects between means to achieve that goal, a process that involves formal business planning based on competitor and market analyses (Sarasvathy, 2001; 2008; Fisher 2012). However it is increasingly recognised that actual entrepreneurs often do not do this, and certainly not to the extent that some had presumed. Hence subsequent theorising on entrepreneurial decision-making has identified the use of effectuation, in which decisions are

based on the identification of means which are subsequently applied to suitable entrepreneurial opportunities, and bricolage, in which neither existing means nor predetermined goals set the entrepreneur's path, rather it is a process of 'making do' with whatever is at hand (Fisher 2012).

In parallel, there is increasing awareness of the limitations of entrepreneurship education which has tended to focus on the teaching of causation and not effectuation and bricolage, behaviours that are arguably just as necessary in the real entrepreneurial world. In this paper we reveal when why students use effectuation, causation or bricolage when they are immersed into a microcosm of a 'real-life' entrepreneurial task, fund-raising for social entrepreneurs in a resource-constrained environment. This is in order to provide a more granular understanding of the educational needs of entrepreneurship students and identify the times and contextual imperatives that shape the adoption of the different OM behaviours. Our longitudinal qualitative data captured the students' journey over time as they critically reflected on what they had done and why they had done it (Welter et al., 2016).

In doing this we are able to provide insights as to why effectuation and bricolage, as well as causation, should form a stronger part of entrepreneurship education. For example, when entrepreneurs are working in a time-unconstrained, and predictable situation, then causation is an appropriate behavioural choice (Sarasvathy, 2001). In a time-pressured, stressed and risky contexts, effectuation and bricolage are useful (Fisher 2012; Perry et al., 2012; Welter et al., 2016). Educators need to understand this in order to guide students appropriately, and to provide them with the means to acquire the skills and knowledge that will allow them to make good behavioural choices.

The structure of the remainder of the paper is as follows. First we outline the literature on

opportunity management behaviours and the use of live projects as a microcosm in entrepreneurship education. This is followed by a discussion of the methods used to collect and analyse the empirical data. We then (unfold) and explain the students' use of different opportunity management approaches within the live fund-raising projects. The conclusion summarizes the contributions of this article to the decision-making logics' theory of entrepreneurial behaviour and entrepreneurship education theory and suggests areas for future research and practice.

Entrepreneurial decision-making

The recognition and exploitation of opportunities are a core problem for entrepreneurs (Mair and Marti, 2006). Theory on the components of opportunity management has broadened over time. The original construct, causation or 'rational' theory, is an economics-based approach in which entrepreneurs discern an opportunity and then follow a normative decision making process to exploit it (Hindle, 2004). By collating essential information, they go through a systematic evaluation of choices (Alvarez and Barney, 2007; Miller 2007). The entrepreneur achieves the desired outcome through the assembling of required resources (Lanivich 2015).

A subsequent broadening of the theory was the defining of 'effectuation' or 'effectual logic'. Sarasvathy (2001, p245) defines effectuation as a decision making process that does not begin with a specific goal ... "instead, it begins with a given set of means and allows goals to emerge contingently over time from the varied imagination and diverse aspirations of the founders and the people they interact with, bringing in his or her skills, resources, people, and networks". Effectuation is means-driven, as opposed to causation which is goal-driven. Effectuation's original five principal components: 'bird-in-hand', "affordable loss", "lemonade", "crazy-quilt" and 'piloting the plane' (Sarasvathy, 2003) were subsequently operationalized by Chandler et

al. (2011) and Fisher (2012) into seven categories that we have used as the basis for our analysis, and which we discuss in the findings section below.

The most recent aspect of opportunity management to be conceptualised is ‘bricolage’ (Lévi-Strauss, 1967), the application of new combinations of whatever resources are at hand to develop solutions to an opportunity that has been identified (Di Domenico et al., 2010). Baker and Nelson (2005) identify three aspects of bricolage: “the resources at hand”, “recombination of resources for new purposes” and “making do”. Bricolage has the additional connotations of refusing to recognise, or be constrained by, the limitations of existing definitions of the problem (Mair and Marti, 2006).

Causation tends to be used in a flourishing or stable and predictable environment, where opportunity creation is incremental, such as differentiation of a product where its market and competitive environment are already known (Sarasvathy, 2001). Causation involves identifying a gap and developing a plan to address it (Alvarez and Barney, 2007; Sarasvathy, 2003). Studies of actual entrepreneurs (Dew et al., 2009; Dew et al., 2015; Fisher, 2012; Senyard et al., 2009) have identified a much broader repertoire of OM behaviours used, but this has not yet resulted in an updated focus on the different opportunity management behaviours in entrepreneurship education.

Effectuation is more commonly found in situations where the future is unknowable and, therefore, not measurable. Effectuation’s cognitive principles (Sarasvathy, 2001), which we discuss in more detail later, are the means to adapt resources and create new opportunities (Welter et al., 2016) as well as reducing complexity in an environment that is lonely, uncertain, and full of risk (Gibb et al, 2013).

Bricolage, which has been less researched than the other two OM categories, tends to be found in conditions where resources are especially scarce and penurious, and uncertainty-based risk is higher (Senyard et al., 2015; Welter et al., 2016). These conditions are particularly common in the case of business start-ups in a new field (Beckett et al, 2015; Fisher, 2012). There is a growing literature on how entrepreneurs respond to resource adversity through the use of bricolage but very little work has been done on the competences or skills necessary to use bricolage effectively.

As theoretical constructs causation, effectuation and bricolage have some critics (e.g. Arend et al., 2015) who suggest that each element remains to be fully developed conceptually. For example the literature has failed to define adequately what influences the perception of uncertainty and risk, and therefore underpins the selection of OM behaviours. However, increasing numbers of scholars are examining the use of these three cognitive logics by entrepreneurs (Welter et al., 2016; Fisher 2012; Mäkimurto-Koivumaa and Puhakka 2013). Studies now confirm that entrepreneurs use a range of different decision-making logics to deal with the creation of a new venture under conditions of uncertainty (Baker and Nelson, 2005; Daniel et al., 2015; Sarasvathy, 2001; Read et al., 2009). But whether these skills are acquired by entrepreneurship students, and if so, how, is a different matter. Very few studies have examined cognitive logics in education (Ghina et al., 2015; Salusse and Andreassi, 2016; Williams et al., 2014). Even fewer have used deep qualitative data to explain the reasons behind these choices. An awareness of this gap underpinned our study.

Entrepreneurship education

Research suggests that university entrepreneurship programmes have had mixed success in developing students for an entrepreneurial career (Fayolle, 2013; Nabi et al, 2016; Souitaris et

al., 2007). We know that enterprise education has already expanded in terms of what is being taught, from a narrow definition of what entrepreneurship is about, often centred around traditional business school competences, to include training 'for' entrepreneurship and finally to encompass experiential and existential aspects of enterprise education by a focus on learning through entrepreneurship. However this “not been adequately articulated either in course descriptions or in the academic literature” (Blenker et al., 2015, p 134). Most of the studies on entrepreneurial behaviours have focused on entrepreneurial attitudes and the intention to start a business (Pittaway and Cope, 2007; Souitaris et al, 2007) and not on learning ‘entrepreneurialness’.

Despite an increasing awareness of the entrepreneur’s actual behaviours most entrepreneurship degree programmes appear to offer little in the way of teaching students about the appropriate use of these behaviours (Fayolle, 2016; Nabi et al, 2016). Entrepreneurship education is still heavily focused on causation (Kickul et al., 2010; Matlay, 2008). There is increasing criticism of the didactic classroom-based approach to teaching novice entrepreneurs and increasing recognition of the benefits of live projects or microcosms (Chang, et al., 2013; Fayolle 2013; Neck et al., 2014). How students act in a microcosm is unknown (Welter et al, 2016). Especially relevant for our study, Corbett (2005) found that action learning is a useful means for students' to discern and act on opportunities, and reflection on critical incidents results in higher levels of entrepreneurial awareness (Lindh and Thorgren, 2016) Both together measure participants' learning and development as they happen in real time (Kassean et al 2015; Rasmussen et al., 2006). Using such methods would allow us to explore how and why a resource-constrained live project resulted in the different OM behaviours (Baker and Nelson, 2005; Fisher, 2012).

The microcosm as a pedagogical device for entrepreneurial learning

The live project that we used as the means of examining students use of the different OM behaviours, fund-raising for a social enterprise, provides a microcosm, or scaled-down version, of entrepreneurial activities (Kapranos, 2016). Scholars such as Souitaris et al. (2007) suggest that the challenge for entrepreneurship educators is to develop a pedagogic device that encourages the development of entrepreneurial behaviour through immersion in real rather than simulated activities (Tosey et al 2015; Gibb, 2014). A microcosm has been used successfully as a tool for entrepreneurship development in order to illustrate the activities of an entrepreneurial actor in rural Bangladesh (Mair and Marti, 2006). We argue it is also suitable for entrepreneurship education within a higher-education context. It has some overlaps with the use of live projects, which are well established entrepreneurship pedagogies (Chang, et al., 2013; Fayolle 2013; Neck et al., 2014). It is inherently immersive (Gibb 2014). However a microcosm contains specific additional features that are intended to mimic the entrepreneur's world. According to Souitaris et al. (2011) it should: allow a change in entrepreneurial attitude or behaviour; facilitate learning of entrepreneurship; be a means of inspiring and motivating entrepreneurship; provide incubation resources

The question is does a fund raising project adequately represent a microcosm of the entrepreneur's world? We argue that it does. Fund-raising for a social enterprise, without prior financial resources, is an entrepreneurial process in which opportunities are transformed into value. As such it provides some similarities to the entrepreneur's world (Fisher, 2012; Welter et al 2016). There is scope for stress and time pressures to be perceived, it provides the means for developing awareness of the consequences of scarce resources and the opportunity to use resources as a means to control uncertainty. It encourages students to search and select, and

develop unformed ideas into valid ideas. It allows for students to develop financial plans, negotiate with different stakeholders, promote their activities, and develop their ideas into larger-scale operations, which they then have to implement. Such immersion involves elements of risk reduction, strategic thinking, and learning under pressure.

However, we know that there are some contextual differences between students working in a microcosm and actual entrepreneurs that need to be factored into our theorising in order to help understand the issues that may be relevant for student entrepreneurs' education. For example even though they were able to choose their own team members, students had a relatively narrow group of people to work with. Entrepreneurs, in contrast, tend to work with a network of established relationships (Rauch et al., 2016), who can provide a more stable and predictable environment and access to additional resources through their own networks. Entrepreneurs are also likely to choose teams that are culturally similar (Hardy and Tolhurst 2014). In our case there was the potential for some groups to encounter conflict and relational difficulties simply because of the internationally diverse nature of the student body (Apfelbaum et al., 2014; Moreland et al., 2013). This may lead to a preference for those OM behaviours that are less psychologically expensive (Grupe and Nitschke 2013).

To summarise, in this paper we are interested in a poorly-researched area, that of understanding students' use of causation, effectuation and bricolage behaviours within a fund-raising project that provided a microcosm of the entrepreneur's world. We now describe the methodology that we have adopted in order to answer this question.

Methodology and data analysis

Our primary purpose was to understand what OM behaviours entrepreneurship students use

over the period of a live project (Dew et al., 2015; Politis et al., 2012) that mimics entrepreneurs' problems (Lehner and Kaniskas, 2012). This ontology requires longitudinal data and an explanatory methodology (Grey 2007; Jones et al., 2011).

Students were tasked with raising money for a social enterprise without any prior budget. This took place within an elective 2nd year entrepreneurship module on an undergraduate business degree in a UK business school. 122 students participated in the module, divided into 25 teams. They were not required to have any prior knowledge of entrepreneurship concepts or theory in order to join the module, although all had taken core business and management modules (e.g. marketing, accounting, economics) in their first year. The objectives of the project were to enable students to be immersed in a real project, a form of "learning by doing" (Pittaway and Cope, 2007). The microcosm that we selected, as described above, would allow students to learn the skills that entrepreneurs need and also develop some empathy for the entrepreneur's world.

Mentoring was provided by academic staff who met weekly with the students in order to provide feedback and discuss options. Each student team was given the task of raising funds for one of six social enterprises. Their fund-raising activities included social events, such as food fairs, costume and comedy nights, salsa evenings, football competitions, and charity auctions, sales of T-shirts, a 'fun fair' using recycled materials, movie nights, computer games competitions, radio advertisements and a photo gallery competition. Each team was required to report on their progress on a weekly basis reflecting on what they had done, and why, and what had worked and what hadn't (Lindh and Thorgren, 2016). It is these reflective logs that are our primary data (Pittaway et al., 2011; Pittaway and Cope, 2007). In total these averaged between 9,000 and 10,000 words per group, about 250,000 words in total. The amount of money raised

was not to form part of the assessment: instead students were graded according to the quality of evidence of their activities as well as reflection on their learning. In line with the university's ethics policies all 25 student groups gave their permission for their data to be used for research purposes.

We used Fisher's (2012) scale to identify the use of the different opportunity management behaviours by the students. We also looked to identify patterns in the factors that caused the choice of these behaviours, for example the characteristics of the project environment (stable, pressured, complex), team characteristics such as diversity and experience and group dynamics. These were identified through a process of theme identification and interpretative synthesis rather than the positivistic application of a predetermined analytical framework (Åsvoll, 2014; Gray, 2007). Two of the paper's authors went through all the data and agreed on the themes and the OM behaviours identified. Where there were differences, these were discussed and a common conclusion reached. There was no attempt to measure the degree of disagreement or inter-coder reliability ratings; all classifications were discussed and an agreed decision reached.

Findings

In this section we describe the ways in which students used the different categories of opportunity management behaviours, when they used them, and what stimulated their use. We especially identify changes in behaviours at certain time periods as the fund-raising project progressed, and explanations for differences in the choice of behaviours between the different student groups. Table 1 shows the demographics of the student teams. Table 2 shows some of the contextual factors that were linked with the different types of OM behaviours and Figure 1 shows the use of OM behaviours over the period of the fund-raising projects. We discuss these

in more detail below.

Insert Table 1 about here

Table 1: Demographic profile of the student groups

Male ^{a)}	Female	International member**	Experienced member	Target achievement %
3	3	0%	0	7%
5	0	20%	0	19%
5	0	40%	0	30%
4	0	0%	0	36%
3	2	20%	0	36%
3	2	65%	0	39%
2	2	25%	0	45%
3	2	0%	0	45%
5	0	0%	0	47%
5	0	80%	0	57%
3	2	0%	0	57%
1	4	0%	0	59%
2	2	25%	0	62%
3	2	40%	0	71%
2	3	20%	0	71%

4	1	25%	0	72%
2	2	100%	0	80%
4	0	0%	0	87%
3	3	33%	0	90%
3	2	40%	20%	92%
2	3	20%	0	100%
2	3	20%	20%	101%
1	4	0%	0	105%
4	1	20%	40%	138%
5	1	0%	17%	140%
Total 79	Total 44	Average 22%		Average 67%

* Gender did not seem to be linked to issues of diversity, experience or conflict within of the group, or to overall performance

**The presence of international students within a group does not necessarily indicate different ethnicities

In total 47% of the behaviours used related to causation, 27% to effectuation, and 26% to bricolage, but as Figure 1 demonstrates the preference for one over the others differed over the lifespan of the project.

Insert Table 2 about here

Table 2 Contextual factors influencing the choice of OM behaviours

	Average Causation ^{a)}	Average Effectuation	Average Bricolage
1a) Internationally diverse (n=15)	19.4	13.1	10.4
1b) Non Diverse (n=10)	19	10	8.9
2a) Experienced (n=4)	24.5	13.3	9.5
2b) Non Experience (n=21)	18.2	11.6	9.8
3a) Conflict ridden (n=5) *	20.0	8.8	8.6
3b) Non conflict ridden (n=20)**	19.1	12.6	11.5
Overall n=25	19.5	11.2	10.9

a) the average of OM behaviours over 10 weeks divided by n groups. for example for diversity we added the total number of causation behaviours of the five groups over 10 weeks and divided by 5

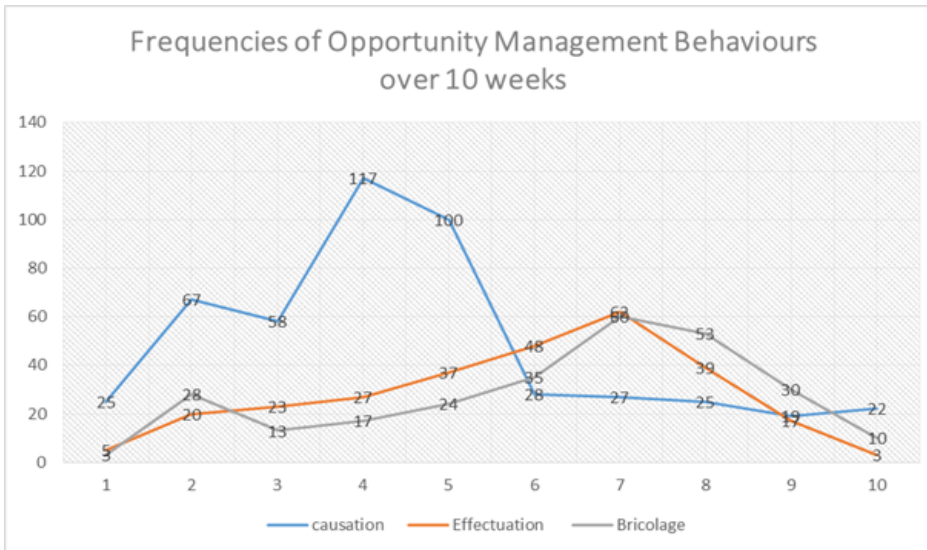
*There was long-standing and unresolved conflict in five groups. Although beyond the scope of the current paper to discuss, this seemed to be due to cultural difference including religious beliefs.

** Almost all groups experienced conflict at the outset. We defined long-standing conflict as those groups where significant disagreements were present throughout the project.

A more granular assessment of the reasons for these choices is discussed in the following sections. At this stage we simply note that causation behaviours such as the identification of opportunities, project planning and control processes were particularly prevalent between weeks 2 and 5 when students applied the teaching from previous courses such as accounting and finance and marketing, which typically emphasise causation types of analysis. Week 2 was when most groups visited the social enterprise and became aware of the ethos and the need for the enterprise to be compliant within the law. Bricolage behaviours became particularly manifest nearing key event dates later in the project as the project path turned out to be not quite as the students had predicted. And both effectuation and bricolage behaviours increased

over time as the students learned by doing and came to depend more on the behaviours that they had been able to practice, rather than those that they had simply learned in the classroom.

Insert Figure 1: Frequencies of Opportunity Management Behaviours over 10 weeks about here



However this summation does not quite capture the totality of the choice of OM behaviours, and in the following sections we discuss the specific examples of the OM behaviours used, and provide some explanations for these choices.

Causation

In looking for indicators of causation, we based our analysis on Fisher's (2012) definitions of this type of behaviour: Identifies an opportunity before developing anything; identifies and assesses long-run opportunities in developing the firm; calculates the returns of various opportunities; develops a business plan; organizes and implements control processes; gathers and reviews information about market size and growth; gathers information about competitors and analyzes their offerings; expresses a vision and/or goals for the venture; develops a project

plan to develop the product and/or services; writes up a marketing plan for taking the products/services to market.

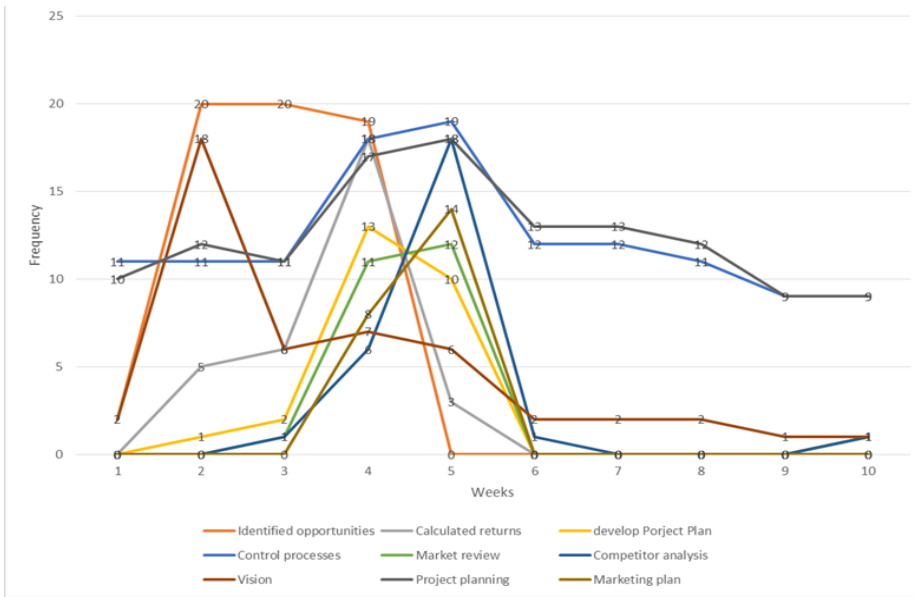
Examples of students' causation behaviours include:

We conducted a survey to our target in order to measure the market potential, and if students would be willing to come to our event. It shows that 64% of the interviewed go out at least once per week. It represents a potential market of 15360 students, on a total number of around 24000 at the University. Also, they go out mainly on Thursdays, Fridays, Saturdays, but also during other weekdays, which gives us flexibility to choose a date for our event, depending on other parties, exams, students availabilities, etc. (Gathered and reviewed information about market size and growth)

After the tour, we set out to raise even more money than we had intended initially. However, we need to apply what we study in the Business perspective to find out the impact of the changing trends of graduates in UK. We need to identify what the different factors affecting this trend and our ideas should fit into these trend to promote the cause of this to St Luke's. (Identified and assessed opportunities).

We have identified that the key to maximising revenue is to gain as much exposure as possible. As well as posters and flyers, we plan on gaining exposure through the university magazine ... as this will help us reach our main target market. We will also make use of social media where possible. This will involve creating an event page on Facebook and inviting as many students to join the group as possible (Wrote up a marketing plan for taking the products/services to market)

Figure 2 shows the pattern of causation behaviours over 10 weeks.



Insert figure 2 about here: The pattern of causation behaviours over 10 weeks

All categories of causation behaviours were used by at least some of the student groups each week. Causation processes take a particular effect as a given, and focus on selecting between means to create that effect. This reflects what might be considered the traditional teaching of entrepreneurship (Matlay, 2008): it also reflects the conventional business practices that our students had already been taught so it is no surprise that we see evidence of these behaviours. The groups all came out with at least two ideas that had to be tested in order to assess the viability of the opportunities identified. They organized and implemented control processes to ensure that the ideas were implementable, and then the majority of the groups developed business plans that detailed their ideas for revenue generation, as agreed with their social enterprise.

In line with the tasks that students were set, causation frameworks that were derived from previous teaching (for example how to analyse financial performance, how to undertake competitor analyses) were used extensively. Some were linked to the timing of the task:

visioning and opportunity identification were used at the beginning, but less so subsequently. Calculated returns was dominant when the students had to submit their plans, with attendant performance predictions, to the social enterprises in week 4. Market reviews, competitor analysis, marketing plans, and business planning were all undertaken at the appropriate time. Control processes and project planning were used steadily throughout. The story from causation is that there were few surprises.

Effectuation behaviours

In identifying effectuation we again look to Fisher (2012 p. 1030) and Chandler et al. (2011) to operationalize the seven categories of effectuation behaviours (Figure 3): developed multiple variations of a product or service in arriving at a commercial offering; experimented with different ways to sell and/or deliver the product or service in arriving at a commercial offering; changed the product or service substantially as the event developed; committed only limited amounts of resources to the venture at a time- affordable loss; responded to unplanned opportunities as they arose; adapted what they were doing to the resources on hand; entered into agreements with customers, suppliers, and other organizations.

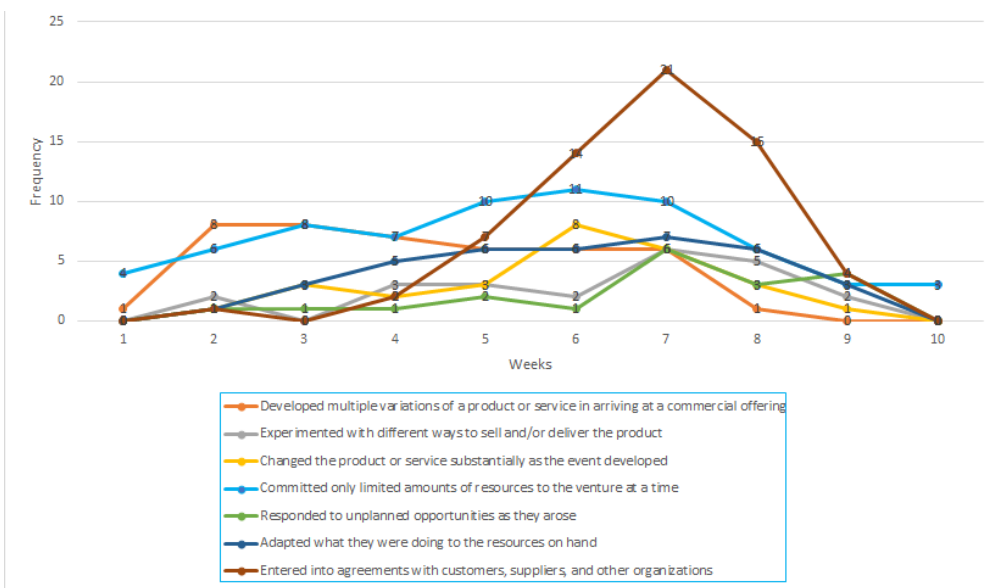
Examples of students' effectuation behaviours include:

We started with a number of ideas around bingo nights with food and drinks even lottery... since we have the experience of cooking...baking...and some of us worked in this area. Then we finalised a theme "Food for Good". We quickly moved on to see what kind of food is popular among our friends ... and we found that the cupcake was the most popular (Developed multiple variations of a product or service)

We charged £3.00 per song during karaoke session. We sold the tickets online but discovered

that making sales to banks, friends and to local businesses are more effective with our sales pitch . We have to make more effort to increase the online sales via facebook and twitter (Experimented with different ways to sell and/or deliver the product)

By week 8 the Just Giving page response was poor, so we sought the permission of academics with large classes to give us one minute sales pitch on our events. We brought along the donation buckets supplied by the charity (Adapted what they were doing to the resources on hand)



Insert Figure 3 about here: the use of effectuation behaviours over 10 weeks

changed the product or service substantially as the event developed; committed only limited amounts of resources to the venture at a time- affordable loss

Figure 3 reveals that all effectuation behaviours were used by the student groups over the ten week period, albeit with changes over time. In terms of temporal links one could argue that there were few surprises. Adaptation behaviours, for example, were only seen after the first ideas had been developed and discussed, and agreement behaviours were seen especially after

week 7 as students realised that they needed to begin to implement their fund-raising activities.

Overall the highest category related to the use of limited resources. The briefing that they received meant that students knew they would not have a starting budget and could not bring in additional resources; all had to be developed from scratch. This meant that they *had* to depend on their own resourcefulness to achieve a positive outcome, and thus early stages saw the attempt to identify and muster resources, including the group's knowledge and relational capital. In most of the weekly reflective logs, the 'no starting funds' requirement was perceived to be a challenge. However, it compelled students to assess the intrinsic resources available to the group and use creative means of achieving their goals; responding to unplanned opportunities (or what Sarasvathy (2001) termed 'bird in-hand' principles applied when students had to look into their resources and identify who they could call upon to help them raise funds. The ideas for generating income were drawn from the experiences and competences of team members and available networks from their present and previous work places, family and 'friends of friends'. Because of these constraints we also could see that entering into agreements with suppliers and others are dominant, as the only way of obtaining the resources they needed.

All of the groups approached the business communities around their social enterprises, although some were more effective at this than others. Most created Facebook accounts to raise awareness of their projects among their classmates, student unions, and business communities. Comments were sought from customers of the projects through these social media, both on the projects themselves and on how to get more resources. This fits in well with the effectual logic of getting agreement from customers as partners. The behaviour of 'affordable loss' was also discernible, as the students thought up novel ways to limit the amount of money they needed to

spend.

The least frequently demonstrated behaviours were experimentation, changing the product or service, and responding to unplanned opportunities: the effectuation behaviours that prevailed between weeks 3-7 are to do with adaptation, efficiency and agreement with different stakeholders.

Bricolage

In looking for examples of bricolage we again look to Fisher (2012), who drew on work by Chandler et al. (2011) and Senyard et al. (2009) to identify eight categories of bricolage (p.1031) (Figure 4). These are: make do, combine resources, reuse resources, use existing resources, use forgotten resources, labour inputs, skills inputs and compliance.

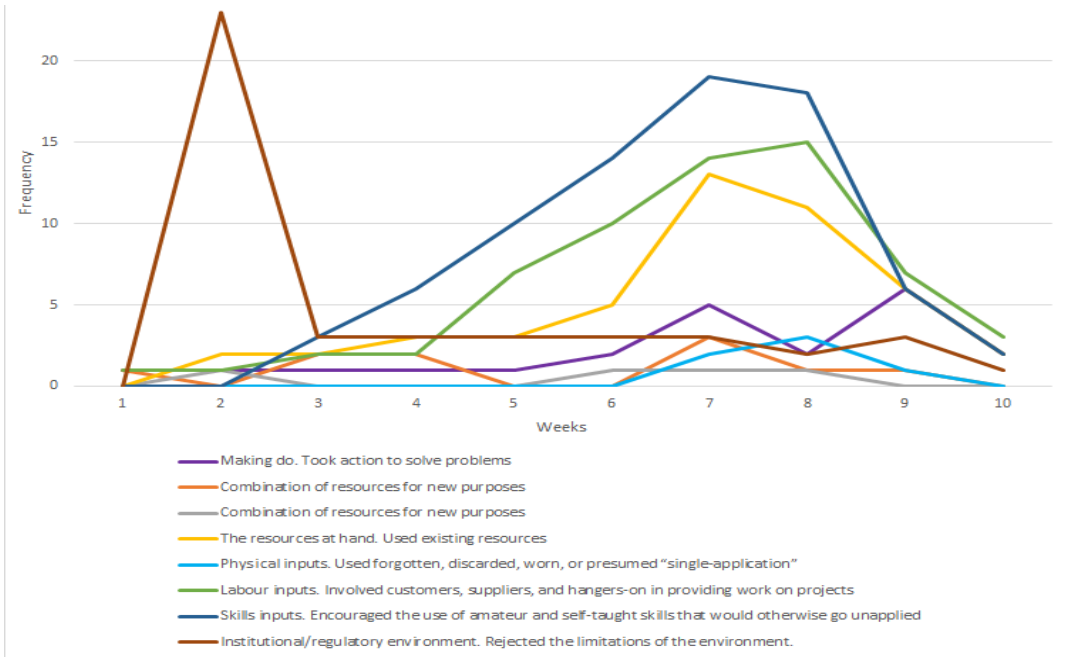
Examples of students' bricolage behaviours include:

Following the visit to [the SE] last week, we have noticed that there are a lot of businesses which can aid in promoting the Radio Station. This idea will benefit both levels: not only will it promote [the SE]. In addition it will also help those participate in the business to build rapport with the local residents as their business will be placed into the spotlight (Reused resources for purposes other than those for which they were originally designed)

I have also gained an innovative skill because with the idea of making something out of nothing really made me think of many ideas that could be done in future. This meant I had to write professional letters to persuade and prove to the charity that we are serious about working with them and raising funds for them (Encouraged the use of amateur and self-taught skills that would otherwise go unapplied)

The theme Recycling is Fun is inspired by the empty tin cans, left over darts and dart boards around and we decided to have fun theme to generate fund (Combined existing resources in creating solutions)

Insert Figure 4 about here: the use of bricolage behaviours over 10 weeks



With the exception of compliance with the needs of the environment (such as university and module regulations), bricolage behaviours were not really used until the students were faced for the first time with the real world of the social enterprise during week 2. Team visits to the social enterprises allowed them to access under-used resources within the organisation. Bricolage behaviours were particularly prevalent near to the event date for example between weeks 8 and 10, suggesting that they were a response to what was perceived as a crisis as the students needed to “improvise” to get things done. One example relates to where the students were seeking donations to sell on. When they became aware that their donation rate was not good enough, a sense of urgency made them seek out more proactively the resources that they could

draw upon. Another example came from one group who not obtain sufficient funds in time and so approached another colleague who ran large classes in order to attempt to increase participation in their online photo competition.

Most of the teams sought resources outside the social enterprises and were reliant on business sponsors and university facilities to combine resources in order to generate income, although this was not a dominant theme in the logs. There was also very little evidence of the reuse of resources. Instead, personal resources such as labour and skill inputs, although these are poorly conceptualised in the OM literatures, were more relevant to these students.

The students' initially rather optimistic targets for revenue were moderated over time, and were influenced by their desire to generate more income for the social enterprise. This suggested an increase in empathy for the social enterprise and the students ability to relate to the cause of the organization. This stimulated an awareness that they needed to do more, and could not simply coast; an increase in bricolage behaviours was the result.

Discussion

This study has investigated students' use of causation, effectuation and bricolage behaviours within a fund-raising project that provided a microcosm of the entrepreneur's world. We were interested in when, and why, students use the various opportunity management behaviours over time. The fund-raising microcosm that they were faced with provided a context in which a range of approaches could be used in the processes of idea and revenue generation (Welter et al., 2016) in order to identify how OM behaviours may best be introduced into entrepreneurship education.

Our data show that the student groups used all three categories of opportunity management

behaviours, causation being most prevalent followed by effectuation and bricolage. Our results concur with the findings of Dew et al. (2009) who found that MBA students made decisions regarding possible opportunities using a 'predictive frame' and relied heavily on textbooks. Established entrepreneurs are known to be less likely to use the causative approach (Dew et al., 2015). Despite this, causation tends to dominate the conventional business school teaching, including that which our students had experienced (Kickul et al., 2010; Matlay 2008). We suggest that this conditioned them to behave in ways (Calvard, 2015; Minniti, 2008) that may have been inappropriate given the nature of the task, its time frame, and the resources that they had available (Duxbury 2014). We also hypothesize that causation, being less risky and psychologically expensive (Grupe and Nitschke 2013; Pittaway and Cope 2007), may be more prevalent than experimentation because of the students' need to address two goals simultaneously - to engage in entrepreneurial value creation and to pass the module. A preference for product adaptation showed that students would take what they perceived to be the less risky (i.e. more comfortable) decision.

In explaining the types of behaviours used, and the factors that appeared to stimulate them over the period of the project, we could identify a number of factors that were derived both from pre-existing literature and inductively from our own data. These included time pressures, the presence within a group of at least one experienced student who had worked in an enterprising environment such as a family business, and diversity-related conflict within the groups.

Groups with an experienced member, who arguably acted as informal coaches and also conflict-mediators within their groups, used more effectuation behaviours and also exhibited more of all of the three types of OM behaviours than the groups without an experienced member. Although competitive performance was not part of the students' brief or assessment, five of the groups

that surpassed their fund-raising targets used more of all of the OM behaviours and vice versa, and specifically more effectuation than the less successful groups. Groups with high levels of diversity in the form of international students and a member with entrepreneurial experience achieved more than their intended goals more than groups with no experienced member but high diversity or low diversity but with an experienced member. Groups that have international students and at least one experienced members were also less conflict-ridden. These groups demonstrated higher level of causation, as well as effectuation and bricolage. We suppose that the live project allows sufficient opportunity for such students to exercise their knowledge of causation, capitalizing on the resources within the group, and choosing which behaviors to use to their greatest effect.

This suggests that groups with entrepreneurial experience are able to capitalise on diversity, whereas those without cannot. We explain this by assuming that inexperienced students would tend to rely on what they had been taught whereas experienced students had a greater repertoire of knowledge and skills to draw upon. With entrepreneurial experience members tend to adopt more effectual and bricolage behaviours, incorporating a wider range of resources and leading them to achieve higher revenue generation. We did not specifically explore the issues around diversity and numbers of relevant groups were small. However this is something that we believe would warrant further investigation. The groups only needed one person of this kind to influence choices of OM behaviours; more than one experienced person made little difference to the group's behaviour. Nevertheless, it suggests that educators may need to actively intervene in the membership of groups so that entrepreneurial experience is part of the mix.

Experience shaped the choice of OM behaviours in other ways (Brettel et al., 2012). Inexperienced students had to depend on rationalisation and analysis rather than intuition or

other heuristic-based decision-making processes that more experienced students could draw upon (Kickul and Gundry 2011). Experience may give confidence in decision-making processes, and is also likely to increase awareness of the types of resources needed (Berends, et al., 2014), the means of obtaining them, and the consequences of failure (Brinckmann et al., 2010; Gielnik et al., 2015; Ramussen et al., 2006).

Tight deadlines and perceived task-difficulty act as stressors (de Clerq et al 2014), putting pressure on team functioning (Costa et al., 2015; Ensley et al 2002; LePine et al. 2005). As the deadline approached causation behaviours diminished. This was also the time when students became increasingly aware of the multiple expectations that they were faced with, having to pass the module, at the same time as the pressures to raise money for a deserving cause were rising. These may reduce the propensity to take brave decisions or risks (Bradley et al., 2012; Dutta and Thornhill, 2014). Therefore the more pressured the task, and the less experienced the student groups, the more likely they were to depend on the knowledge that they had been taught (causation) rather than experimenting with the more unknown types of OM behaviours although the less experienced groups tended to less causation, less effectuation and less bricolage, basically less of everything. Perhaps this shows that less experienced students need to learn the skills needed to practice all three types of behaviour, even though they may have the knowledge of causation.

Conclusion and recommendations for further research and practice

Our findings contribute to theoretical debates in a number of areas of entrepreneurship education and practice. Firstly, there is little empirical research on the use of OM behaviours, less on the underlying causes of the choice of these behaviours, and even less on the use and causes of these behaviours by entrepreneurship students (Dew et al., 2009; Perry et al., 2012;

Welter et al., 2016). Our research contributes to this debate by introducing the microcosm as a learning environment that allows students to enact opportunity management behaviours. According to Fayolle (2013) there is almost no research focusing on how to mix practice-oriented and theoretical knowledge in relation to opportunity management education. Currently its teaching is largely disconnected from the exigencies of entrepreneurial practice (Edelman et al., 2008; Vanevenhoven, 2013). The approach that we describe in this paper helps to bridge this gap in showing how students develop their ideas into outcomes in a specialized-task setting which in our case focused on fund-raising for a social enterprise.

The use of a fund-raising project as a substitute for learning in an actual entrepreneurship context focuses attention on the role of microcosms as pedagogical devices (Kapranos, 2016; Mair & Marti, 2009). Kyrö's (2015) view is that a microcosm offers a radically new vision of learning because of its creative, responsibility-inducing and risk-exposed dimensions. Their use mimics the pressures that entrepreneurs actually face. They encourage, and even force, students to engage in a range of resource-creation activities. However, what a microcosm should look like is more uncertain. We believe that the The fund-raising project that we used in this study has provided a useful pedagogical device for engaging students in the entrepreneurial process and creating empathy among novices about the entrepreneurial life (Chang & Rieple, 2013; Gibb, 2010; Kapranos, 2016). However, we caution that evidence of behaviours used by students is not necessarily evidence of student learning. We did not examine the learning process and further research could usefully identify which of the opportunity management approaches provided the platform for the most insightful learning. It would be useful to investigate the explicit learning path that they took to get to these behaviours, whether they were examples of learning by doing, theoretical learning via academic texts or research, or

social learning in which they learnt from colleagues or the social entrepreneurs themselves.

There are few empirical studies on what makes for effective learning environments of this nature (Fayolle et al., 2016). For example, how difficult and time-pressured should the task be? Complexity, risk, uncertainty and working with different stakeholders are all contextual factors known to shape behavioural choices in the 'real' world. Should a microcosm attempt to imitate this? If so, how? Students have different levels of skill and different experiential backgrounds to entrepreneurs, and the nature of the task needs to reflect this if students are not to be frightened off from entrepreneurial careers.

OM behaviours were clearly evidenced by our students in their descriptions of the acquisition of entrepreneurial know-how within the microcosm. Responding to a resource-constrained task forced them to use a range of skills (e.g. creativity, negotiation, pitching, working with stakeholders). And from their logs we could see a developing awareness of their need to change behaviours, and arguably become more resourceful, over time. This was despite these not having been formally taught. We would suggest that the principles of effectual or bricolage behaviours should be taught, if only to make students aware of their possibilities and perils. However, we caution that coaching was used to support the students, which may have shaped the students' behaviours as some of the academic coaching team were themselves experienced entrepreneurs. As Fayolle (2013) suggests, coaching is inherently effectual as it provides a feedback loop that encourages students to reflect on what they have done, what has worked, and what now needs to be done differently. Arguably this is why we saw the use of effectuation only at a later stage of the project (Sarasvathy, 2001). Further research could attempt to understand the differences between students who have been taught about the OM behaviours in a conventional classroom and those that learn about them through discussions with experienced

entrepreneurs.

In our data an important stressor was the national backgrounds of group members. Diversity is a known contributor to group conflict, as its opposite, homogeneity, is a known factor in group agreement or groupthink (Moreland et al., 2013; Apfelbaum et al., 2014). The cultural background of students and the socio-psychologically derived attributes that are the result of innate factors and/or socialisation processes (Autio et al. 2013) are likely to have influenced decision choices, as well as the potential for conflict within groups given that they were under considerable pressure (de Wit et al., 2012; Nouri et al., 2013). We hypothesize that a student's previous experience in dealing with conflict likely to make their group more able to resolve any conflict that does develop, as skills in the resolution of disagreements are brought to the discussions on task behaviours (Yeung et al., 2015).

A question that remains to be answered is whether the fund-raising performance would have improved if students had been more familiar with the different types of opportunity management behaviours through being introduced to them in the classroom. Although this was not part of our study, it is arguable that financial performance could have been assessed and that learning about OM concepts would help students to use them more effectively, improving their performance accordingly. This is something that would benefit from further research. Whether students would use the same range of behaviours given a different microcosm has also not been studied. A better understanding the links between context and behaviours would help both educators and practitioners alike to understand when certain categories of behaviours are more useful. Our study did not attempt to measure the effectiveness of the different behaviours, or link them with the types of fund-raising activities that the students chose. Future studies could also include the backgrounds of students, for example whether those from specific academic

disciplines or different cultures, influences which OM behaviours they prefer, and why.

In our data important stressors (reflecting the nature of our student body) was the ethnic, social and or gender backgrounds of group members. Diversity is a known contributor to group conflict, as its opposite, homogeneity, is a known factor in group agreement or groupthink (Moreland et al., 2013; Apfelbaum et al., 2014). The cultural background of students and the socio-psychologically derived attitudes that are the result of innate factors and/or socialisation processes (Autio et al. 2013) are likely to have influenced decision choices, as well as the potential for conflict within groups given that they were under considerable pressure (de Wit et al., 2012; Nouri et al., 2013). We hypothesize that a student's previous experience in dealing with conflict likely to make their group more able to resolve any conflict that does develop, as skills in the resolution of disagreements are brought to the discussions on task behaviours (Yeung et al., 2015).

Other types of entrepreneurial behaviours not considered in our study. An example of this is the role of 'improvisation' by entrepreneurs as a possible additional approach to the categorisation of entrepreneurial activity (Duxbury, 2014). Baker and Nelson (2005) suggest that organisational improvisation can be an important precursor to bricolage, yet this is not considered in Fisher's model and we did not investigate it. Students working under time and physical resource constraints result in unpredictable and unanticipated consequences (Fayolle, 2013; Duxbury, 2014), making improvisation appropriate. As a side issue, we would concur with those that have criticised the OM model as being rather repetitive and overlapping (Welter et al., 2016), and would recommend further refinement of the categories. Bricolage is where our data encountered some unclear boundaries between the different categories (Baker and Nelson 2005; 2012). We sometimes found it challenging to decide in which classification data should

be placed. For example ‘using resources at hand’ (effectuation) and ‘making-do with what we have’ (bricolage) seemed to overlap (Welter et al., 2016).

Finally, although not discussed in detail in this paper, we saw evidence of students identifying themselves as ‘entrepreneurs-in-the-making’. We suggest that this reflects the powerful effect of ‘real-life’ action learning (Gielnik et al., 2015), thus another avenue for further research is to understand how the construction of an entrepreneurial identity can be encouraged through engagement with actual entrepreneurs engaged on genuine entrepreneurial tasks.

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