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Citation: Bailey, Mark, Arakelyan, Arman, Spencer, Nick and Carrion-Weiss, Justine (2022) Multidisciplinary innovation Armenia: explorations in design-led multidisciplinary enterprise education. In: DS 117: Proceedings of the 24th International Conference on Engineering and Product Design Education (E&PDE 2022), London South Bank University in London, UK. 8th - 9th September 2022. The Design Society. ISBN 9781912254163

Published by: The Design Society

URL: <https://doi.org/10.35199/EPDE.2022.16> <<https://doi.org/10.35199/EPDE.2022.16>>

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MULTIDISCIPLINARY INNOVATION ARMENIA: EXPLORATIONS IN DESIGN-LED MULTIDISCIPLINARY ENTERPRISE EDUCATION

Mark BAILEY¹, Arman ARAKELYAN², Nick SPENCER¹ and Justine CARRION-WEISS¹

¹Northumbria University, United Kingdom

²American University of Armenia, Armenia

ABSTRACT

This paper addresses the question to what extent can rapid design-led interventions support enterprise education? The work is based on a three-year engagement with students and recent graduates in Armenia. It was inspired by a course of innovation-readiness workshops called Get Ready to Innovate used to support established small and medium-sized enterprises operating in North East England.

The paper provides a critical assessment of the adaptation of the GRTI model for the Armenian situation and its strengths and limitations for addressing the requirements of innovation readiness (the willingness, creative mindset and plans to make a positive change) amongst budding Armenian entrepreneurs.

Mixed-methods are used, combining inductive thematic analysis of participant surveys, co-reflective workshops and semi-structured interviews.

Findings suggest that there are a number of benefits associated with adopting a design-led approach, including enhancing creative confidence and multidisciplinary team working. In comparison with other forms of enterprise education, participants and facilitators identified a greater emphasis on front-end exploration and stakeholder focus.

It is also clear that there were shortcomings in the approach associated with a mismatch in expectations between the facilitators and participants. The authors identify the challenges associated with this mismatch and some steps they took to overcome these. Finally, they identify scope for future research that considers implications for educational and enterprise-creation policy as well as discrete programme development.

Keywords: Enterprise education, design-led education, co-created knowledge, innovation readiness, design facilitation

1 INTRODUCTION

In 2018, through a British Council Creative Spark programme, Northumbria University School of Design partnered with the American University in Armenia to develop and deploy a design-led Enterprise Education programme. Supporting principles of the programme aligned with design thinking included establishing a deep understanding of stakeholders; welcoming multiple different disciplinary perspectives; a willingness to frame and reframe the enterprises' situation; rapid ideation; a focus on trying things out; and reflexivity. These principles were employed all with the purpose of enhancing creative confidence - 'the natural ability to come up with new ideas and the courage to try them out' [1]. The programme was based on a successful suite of design-led business support workshops designed and developed by a team of design academics and researchers at Northumbria University as part of the Creative Fuse North East action research programme [2], [3]. This programme, called Get Ready to Innovate (GRTI) [4], focused on promoting innovation-readiness (the willingness, creative mindset, and plans to make positive change) in established SMEs in NE England with the purpose of supporting those SMEs to deliver regional growth. The design-led approach was adopted for its focus on strategic development. The GRTI programme comprised a total of twelve hours of support spread over three workshops and one review meeting and was firmly targeted towards established, trading enterprises. The decision to employ this approach in developing a new programme of enterprise education was based on three factors:

1. the team was experienced in using design-led approaches to educate Master's students for and about innovation and had seen; a, a significant development in these students' creative confidence and b, that the approach was useful in supporting entrepreneurial growth [5], [6].
2. independent evaluation of the Creative Fuse North East GRTI had demonstrated that it was effective in supporting individuals and enterprises to develop both their business ideas and their own confidence as entrepreneurs.
3. the programme had been designed in response to a regional economic development agenda which was very similar to the underlying policy agenda underpinning the British Council's work in Armenia (and surrounding countries in that region).

1.1 Programme design

The original GRTI proceeded through four stages with design facilitators using defined templates and a combination of pre-prepared and ad-hoc prompts to encourage participant enterprises to uncover and explore creative opportunities for the development of their venture. Adapting the approach for the Armenian programme, Get Ready to Innovate Armenia (GRTIA), the team recognized that they would need to adapt it to take account of the fact that the Armenian participants were younger and less experienced and were not necessarily trading. They determined that longer sessions and more scaffolding devices would be required. Keynote lectures were introduced at the start of each block, additional and more detailed templates were developed and 'homework' was set between sessions. Table 1. compares the two programmes.

Table 1. Comparison of the two programmes

GRTI	GRTIA
#1 Triage: Exploring the business as a whole, whilst also understanding who the individuals within the organisation are.	#1 Modelling the Situation: build a picture of you, your vision, ideas, value-chain and the idea's environment. Understand how change, uncertainty and risk are influencing factors in order to consider your challenges, opportunities and where excitement lies.
#2 Opportunity Mapping: Explore the organisation's challenges and opportunities and find early-stage solutions to the goals they identify.	#2 Modelling Opportunities: Explore and clarify a range of opportunities that relate and build towards your vision. Design-thinking activities help articulate ideas, clarifying impacts and consequences of innovation opportunities and their enablers.
#3 Road Mapping: Exploring the goals of the organisation in more depth, looking at the barriers and enablers. Create a roadmap of activities to help understand next steps.	#3 Detailing the Opportunity: Creatively probing different timelines and eventualities, user-journeys and stakeholder maps to develop a deep, holistic understanding of innovation readiness.
	#4 Transition Plan & Communications: Evaluate opportunity which has developed and make plan for the future development. Mentors support creating a plan of action to enable change and move positively towards vision, with clarity about how to communicate proposal to different audiences.
#4 Review: Drill down deeper, reflect on the process and the key learning points.	#5 Unpack: A series of direct prompt questions used to clarify and consolidate learning and hone entrepreneurial purpose.

Critically, the programme was designed to be delivered by local mentors who would shadow the UK team in the first delivery and who would be provided with comprehensive training resources and templates with which to run subsequent sessions. They would support participants between the sessions which would run in three-day blocks over the course of six months. The plan was that participants would be working in multidisciplinary teams developing a pre-existing business idea with which they may, or may not, have been trading.

2 METHODOLOGIES

Three methods of data collection were employed, the first two to aid understanding of the participant experience, the third to gain insights regarding the facilitators' perspectives.

A survey, conducted in a face-to-face setting during the final 'Unpack' session was undertaken with twenty-four participants, with a 100% return. The survey was designed to support participant reflection and to aid them in internalising their learning, whilst simultaneously acting as an initial data collection method. There were seven questions in all, with participants coached to consider in detail how they would now describe their business; who their stakeholders were and what matters to them; to think about immediate action plans; and what potential pitfalls that they should avoid. They were also asked to consider three open-ended questions: 'What have you learned?'; 'How have you changed?'; and 'What must you do next?'. Answers to these three questions informed this study. Written responses to the survey were collected so that they could be reviewed, coded and subjected to inductive thematic analysis.

Purposeful sampling was then used to engage six participants in semi-structured interviews which explored, in greater depth, the answers that they had provided to the survey. Field notes were made during these interviews, again to support thematic analysis.

Two co-reflective workshops involving the authors were conducted with an independent research assistant acting as scribe and also to help ensure that the risk of researcher-bias was minimised. The authors had all been involved as facilitators of the GRTIA programme, four were also involved in delivering GRTI in the UK and two were responsible for devising the original programme. The workshops were structured to promote collaborative reflection. The first, by working methodically through the GRTIA programme session-by-session, aided the facilitators in recalling the specifics of the programme and the participants involved. The second workshop explored each of the themes emergent from the analysis of participant data and considered these alongside the facilitators' own experiences enabling general conclusions to be drawn, backed up by participant evidence. Notes and direct quotations were captured in the form of virtual sticky-notes on a digital white board further aiding subsequent analysis.

The emergent findings were then considered in light of a broader data-set drawn from field notes taken during the original GRTIA workshops, notes of semi-structured interviews with young entrepreneurs, higher education leaders, business leaders and policy-makers all conducted by the authors in Armenia over the course of the GRTIA programme.

3 FINDINGS

The findings can be broken down into two quite separate categories: the self-reported strengths and limitations of the programme as experienced by the participants and the reflective experiences of the facilitators. We will initially consider these separately.

3.1 Participants' Perspectives

We find that the programme succeeded in helping participants develop in four main ways:

1. All twenty-four participants provided responses that indicated that the programme had aided them to establish clarity in the next steps to be undertaken as well as consideration and/or development of a strategic plan for their business.
2. Enhancing their creative confidence - by the end of GRTIA, field notes indicated that around 80% of participants had stated that they felt more confident to generate, articulate, analyse, criticise & share their ideas. In written survey responses, however, participants didn't specifically mention the term 'creative confidence', although 11 out of 24 mentioned characteristics that align with Kelley & Kelley's (2012) definition [1].
3. The programme's design and delivery allowed the participants to learn how to use new approaches (to them) such as Design Thinking (DT) and creative problem-solving. Specifically, nine mentioned DT, two creative problem-solving, and one both.
4. Uncovering the power of teamwork and multidisciplinary, whether it was with stakeholders or with their teammates, as it challenged views and brought different areas of expertise to the table.

3.2 Facilitators' Perspectives

Co-reflection allowed the facilitators to consider how they had adapted the programme to suit the funder's enterprise education agenda and to explore what had gone well and what was lacking. In terms

of what went well, achieving the participant outcomes set out above could all be considered successes, but it is important to look beyond these and to consider the backdrop against which they were achieved. The authors find:

1. A mismatch in the expectations of facilitators and participants – facilitators designed the programme to be delivered to existing teams with established business ideas. Participants joined the programme looking for guidance in how to establish teams and business ideas, with a clear emphasis on front-end stages of innovation
2. The local mentors, whilst exceptionally enthusiastic, experienced and engaged, did not share the same level of design knowledge or expertise as the facilitators. Thus, the dual challenges of introducing new concepts of design-led enterprise coupled with some linguistic limitations presented difficulties
3. The episodic nature of delivery (four, three-day blocks over six months) caused unhelpful inertia
4. Due to their different disciplinary backgrounds and limited experience, some participant teams lacked certain fundamental business know-how or knowledge which hadn't been anticipated in the programme design

The facilitators became aware of these factors as programme delivery progressed – this was an evolving story and one to which they had to respond in real-time.

4 DISCUSSIONS

We have seen that the design-led approach adopted in GRTIA did achieve the aim of enhancing creative confidence, but in considering the extent to which GRTIA usefully supported enterprise education in Armenia, we need to consider more broadly what successful enterprise education programmes might achieve and how design may contribute. The UK Quality Assurance Agency for Higher Education, QAA, states that the 'overall goal of Enterprise and Entrepreneurship Education is to develop entrepreneurial effectiveness'. They define enterprise as 'the generation and application of ideas, which are set within practical situations' and Entrepreneurship Education as 'the application of enterprise behaviours, attributes and competencies into the creation of [...] value' [7]. Jones et al (2014) suggest that enterprise education is 'positioned increasingly as the foundation of entrepreneurship education' [8] and, therefore, propose that the term Enterprise Education is used to refer to this collective domain. QAA presents a model towards entrepreneurial effectiveness which encompasses entrepreneurial awareness, competencies and mindset. Fundamental to developing the entrepreneurial mindset, confidence-building, as noted by Penaluna and Penaluna (2012), 'is crucial' [9]. As a minimum, then, growth in the confidence to generate, experiment with, and exploit ideas, can be seen as a measure of success of enterprise education.

4.1 Expectations

Aside from the evident mismatch in expectations described previously, it is worth considering other innate expectations that may be influential. We might term these cultural expectations and they relate to certain characteristics associated with prior educational experience and disciplinary alignment. Outside GRTIA, the authors were involved in action research to inform the production of enterprise education policy recommendations for Armenia. Through this, they gathered data from young entrepreneurs, higher education leaders, business leaders and policy-makers in Armenia regarding their experiences and expectations of the education system. This research suggested that they are familiar with a more didactic and theory-heavy approach than the dialectic, Socratic, and practice-based mode typical of the UK-based design education approach that underpinned GRTIA. Possibly more influential was the disciplinary upbringing 'constituting different signature pedagogies, mores and behaviours' [10] which can adversely influence both access to unfamiliar learning opportunities and multidisciplinary team interaction. This does not mean that the participants were unable to access or learn from GRTIA, but that they required more reassurance in the approach and adaptability on behalf of the facilitators to provide them the necessary scaffolding.

4.2 About Learning

It is easy to draw parallels between the aims, outcomes and approaches adopted in the Enterprise Education domain and those employed in design and innovation education. Indeed, QAA's aforementioned definition of enterprise could equally well be used as a definition of innovation. Further, QAA qualify their description of enterprise as combining 'creativity, originality, initiative, idea

generation, design thinking, adaptability and reflexivity with problem identification, problem solving, innovation, expression, communication and practical action' all very familiar attributes that design and innovation education seek to develop. Further, Rauth et al (2018), [11] position DT as an effective model for education in support of enhancing creative confidence which Kelley and Kelley describe as lying "at the heart of innovation" as it requires us to face challenges and take risks [2]. Such confidence is closely related to Bandura and Jourdan's concept of self-efficacy - an individual's belief in their capabilities "to mobilise the motivation, cognitive resources and course of action", required to reach their goals [12].

Jones et al. (2019) propose that entrepreneurial agency ('the agency individuals demonstrate in directing their conscious thinking and action toward an alignment of their inner and outer worlds in order to succeed in life') is developed through a combination of pedagogic (educator-directed), andragogic (student self-directed) and heutagogy (student-negotiated) educational approaches [13]. The design of GRTIA, which relies on educator and learner engaging in a heutagogic approach, coupled with the innate Socratic orientation of the educators, was at odds with the cultural expectations of the cohort and this created a situation in which the educators had to be both adaptable and creative in real-time in order to support the different needs of the different learners (as well as the trainee mentors) in the workshop situations. The unique nature of design facilitation is of interest here as Mosely et al (2021) [14] suggest that '[d]esign facilitation is a highly complex, integrative, emergent practice that is innately linked to design process knowledge and understanding'.

The authors rely on this design process knowledge and understanding in their facilitation of such programmes and further research is indicated with regard to the potential of design facilitation as a pedagogic device.

Arguably, as seen in our findings, the design-led approach places greater emphasis on stakeholder needs and desires. Through re-framing ideas with a stakeholder lens, participants are encouraged to be more experimental with their ideas, and in doing so, gain more confidence both in the idea and themselves. This emphasis tends to focus attention on front-end innovation, ensuring that the challenge being addressed is the 'right' one and that the supporting value-proposition takes account of multiple perspectives. Indeed, none of our survey data mentioned any hard business outcomes resulting from involvement in GRTIA.

5 CONCLUSIONS

This research is limited in that there is no counterfactual analysis to tell us how these participants might have fared without GRTIA, the size of the sample group is relatively small and no longitudinal study into the long-term impact of the programme has yet been conducted. All of these factors represent further research opportunities.

We can see that on some levels the design-led approach did deliver. However, the programme, in not recognising cultural mismatches and expectations, or the need to scaffold learning more effectively with a blend of pedagogic content knowledge - 'the command of the content within a given domain' [8] with andragogic and heutagogic approaches made progress slower and more challenging. Arguably, the desired degree of transformation of a learner within this context may be too ambitious for such a short, episodic programme.

To keep the programme on track the facilitators had to be highly adaptable in real-time in order to create an environment in which participants felt safe to take creative risks. Carrion-Weiss et al (2021) suggest that participants perceive the design-facilitator's natural tendency to offer ideas as a means to draw-out knowledge, as generosity [15]. This approach of the facilitators meant that, when participants were struggling with aspects of the programme, facilitators were able to help them understand troublesome concepts by co-creating new knowledge (in the form of ideas) [10] about their own business proposition, thus making the concept more relevant to their situation and thereby more accessible.

How useful is this research and to whom? We suggest that two valuable contributions result from this:

- Adopting design-led approaches to enterprise education can enhance the creative confidence, stakeholder focus and future-focus orientation of participants. This is beneficial for those planning enterprise education programmes who hope to achieve some participant transformation at a mindset level
- For those planning such activities working with participant groups with diverse cultural backgrounds, disciplinary upbringings, or in an overseas location, detailed background research and planning is suggested together with investment of adequate time to fully understand the level and context within which they are operating.

The authors have continued to work together supporting the British Council's Higher Education Policy Dialogue sessions (facilitated by the authors using a very similar approach to GRTIA) and establishing and running a number of design-led innovation certificate programme projects. These action research activities are helping to build a broader picture of the role that design-led innovation approaches can play in enterprise education, creation and policy.

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