



TEACHING NOTES

ENTERPRISE + STEM



LINA QASEM ROBOFUN

Synopsis

Lina established Robofun to help girls learn how to code and to develop a love of robotics. Initially, the business offered free workshops to schoolgirls. Lina saw an opportunity to expand the curriculum and the programs and subsequently turned the idea into a fee-paying business. Robofun received a grant from the AMP Tomorrow Maker Fund due to its social enterprise activities and recognised Lina as a role model in STEAM.

Robofun offers coding, robotics training, and 3D design programs to schoolgirls during the school holidays, at weekends and during school time. Lina has conducted market research and marketing research to help identify her opportunity and know her customers. Lina has been actively involved in networking and credits this to aiding her in identifying opportunities in the marketplace. Lina has two business coaches who are helping her with her planning, and she is aiming to grow the business to an online platform within the next five years.

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Teaching objectives

This case explores several challenges faced by a recent startup in Melbourne. There are some core challenges that Lina faces as it moves forward:

- The management of the business and its key functions as the business grows.
- The funding of the growth of the business
- Scaling the business through operating both a face-to-face business and an online business.

The Robofun case is intended to illustrate and provide a basis for the analysis of several fundamental issues critical to establishing and growth a tech business, including:

- How the opportunity recognition process can occur for a tech business.
- How the testing of the market can occur for a tech entrepreneur.
- How reaching out and getting mentors and advisors can assist with business growth and personal development.

There are several approaches open to teachers for the Robofun case.

For a year 7–8 class, teachers can allocate the case as reading material, where the case can be analysed and discussed amongst a group of students. Time will need to be allocated to reading the case study before the

discussion. It is suggested that students are divided into manageable groups (between 2-3 students), where one student is the appointed spokesperson for the group. This helps to facilitate greater discussion about the case. The students are then shown the end of case study questions one at a time. Students would then be asked a certain question, and then the group would discuss it for not more than five minutes.

The teacher would ask a particular group for their answer and question their rationale behind their answers (probing their reasons). After students' views about the case have been obtained, the teacher should summate what he or she believes to be the correct answer(s) to the case questions.

For a year 9-10 class, the teacher can use the same approach as outlined for Year 7 & 8 students. Alternatively, the case is read by all students individually, and then they discuss the case with the person sitting next to them using the "starter" questions, as a basis for discussion. In the case session itself, students can be assessed on their class participation. Furthermore, after the case session students are required to fill out a brief reflective form outlining their most valuable contributions or comments during the class.

Students can be rewarded marks based on their case preparation, their depth of thought, the way they contribute to the discussion, their critical analysis, and synthesis of the case material, and their active involvement and contributions within the classroom situation.

Discussion sections and key themes

The case ends with a key observation that with the necessary resources (time, effort and money) Lina hopes to grow the business and adopt an online business model. Teachers can make this the key element of their case discussion; however, the real analytic pieces are embedded within the telling of their entrepreneurial journey. The following represents key themes within the case.

Case outset

- Initial sounding of the class as to what they feel the case is about.
- Ask the class, what they feel are the three most important lessons that they took away from reading the case. A synthesis of these can be placed on a whiteboard.



- This acts as a useful preamble and encourages class participation.
- Also, the class will be able to distinguish later, as to some of the key additional elements, which they have learned within the actual case discussion experience, but that they may not have initially considered.

The entrepreneur

- Here the case facilitator can ask questions about students' perceptions of what it takes to be a successful female entrepreneur in tech.
- The focus here is what are central entrepreneurial traits to run a tech business?
- Then the class can be asked are these demonstrated within the case.
- A discussion on the background of the founder can ensue, leading to a debate on the skills and qualities needed for a successful enterprise.

Opportunity recognition

- Here the discussion can focus on the opportunity recognition process.
- Was it through serendipity that Lina was successful? No. The discussion can focus on the importance of gathering data, how her mentors were pivotal and how pitching the idea to gather information on the opportunity was crucial as well.

The growth process

- The case discussion can then move onto how a tech business can grow. What assets (people, physical) and resources (financial as well) are needed to grow the business?
- The teacher can highlight the importance of this future sector. What are the projections for the future?

Key challenges

- What were the key challenges for entrepreneurs growing their business venture? This is a central discussion piece

focusing on areas such as: having the appropriate internal processes in place, having an appropriate business model, having access to finance, the personal dynamics of the founders, relationships with key stakeholders, building the expertise of the team etc.

Core strengths of business

- What are the core strengths of the business? Prioritise their importance.
- Here students can critically analyse and discuss what were the strengths of the business including areas such as; an award-winning business, a well networked and respected founder, reputation in the marketplace, a viable brand and mentors and advisors willing to guide her.

Sustainable business model

- A central element of this case is for students to appreciate that Lina did not have a business background but understood that she had to learn reach out to others to garner that knowledge i.e. through mentors and advisors.
- Here the students could discuss what business model is needed to sustain the business. If needs be the students could be directed to consider using the business model canvas (www.strategyzer.com).

Importance of networking

- It is clear in the case that Lina has developed a group of mentors and advisors.
- Students could consider why is establishing a network of supporters vital? How can this be successfully achieved?

What next?

- Lina needs to get funding for the business to grow. Students should consider the various funding sources for a business. They could consider crowdfunding, bank lending, and angel investors.
- Robofun wants to adopt an online strategy

of course delivery in the future. Students should consider is an online business like a face-to-face business. Is the business model the same? Are relationships the same with an online community and a face-to-face customer.

Questions

1. In your own words, describe the services that Robofun offers.
2. Who are Robofun's customers?
3. Lina used her network effectively to establish her business. What networking opportunities are there for STEAM entrepreneurs to avail of?
4. Very little planning was done prior to starting this business. What would you have included in the business plan if you were starting Robofun?
5. What is the difference between market research and marketing research?

Suggested solutions

It is important to note that the suggested answers here represent potential responses to the questions and are by no means definitive and/or exhaustive. They act as a guide for the discussion of the case material.

In your own words, describe the services that Robofun offers.

Good students would identify that Robofun offers a variety of services to its customers. It offers:

- Coding
- Robotics
- 3D design
- Tailor made designed programs for the customers

Who are Robofun's customers?

Good students would understand the difference between a customer and a consumer.

Good students would indicate that a consumer is the ultimate user of the service in this case: girls.

The customer is the person who buys the service provided by Robofun. In this case it would be the parents and/or the schools.

Lina used her network effectively to establish her business. What networking opportunities are there for entrepreneurs to avail of?

This question is seeking to test the student's knowledge and understanding of networking. Good students would propose an explanation of what networking means which could include the statement that networking involves the establishment of relationships with people.

Networking opportunities can come from various sources and they could come from:

- LinkedIn
- Facebook

Students can be directed to the internet for sources such as 'Meetup.com' where they might identify a meetup group such as 'Melbourne Robotics & STEM Volunteers Meetup'.

Other networking sources can be found through Everbrite and networking events associated with accelerator programs such those offered by:

- Angel Cube
- Melbourne (University) Accelerator Program
- Optus Innov8
- Startmate
- Pushstart
- Innovyz
- Slingshot
- iAccelerate

A business plan was not used to start this business. What would you have included in the business plan if you were starting Robofun?

Thorough business planning can establish that there is an opportunity worth exploiting and should then describe the details of how this will be accomplished.

Although a good business plan assists in raising capital, the primary purpose of the process is to help entrepreneurs gain a deeper understanding of the opportunity they are envisioning.

The business planning process helps entrepreneurs shape their original vision into a better opportunity by raising critical questions, researching answers for those questions and then answering them.

Overall, a business plan is a written document that carefully explains every aspect of a new business venture.

The structure of a business plan generally includes:

- Executive summary
- Mission statement
- Business background
- Product description
- Marketing plan
- Competitor analysis
- SWOT analysis
- Operations
- Financial planning
- Timeline

What is the difference between 'market research' and 'marketing research'?

Many times, these terms are used interchangeably, however there are some fundamental differences between them.

Market research refers to the market in which the business is going to operate in. It looks at market trends (political, economic, social, technological, legal and environmental impacts), competitors in the marketplace

(both direct and indirect), the target market attributes, customer wants and needs.

Marketing research involves research related to marketing. Using the marketing mix as the basis, marketing research would include advertising and promotion testing, product concept testing (such as usability testing), pricing research, channel research etc.

Outside or supplementary reading

The following reports are of interest to understand the robotics, coding, and 3D design.

Report on 3D Printing – Ernst & Young

This report presents the trends, sector use cases and steps to accelerate your 3D printing journey. The report identifies the major trends that are shaping the evolution of 3D printing by looking at favourable business trends, technology improvements and the active 3D printing market. It presents use cases from the resource industries (oil and gas, metals and mining); automotive and consumer products and retail. It concludes by discussing what organisations need to do in order to overcome their concerns. Source: [https://www.ey.com/Publication/vwLUAssets/ey-3d-printing-report/\\$FILE/ey-3d-printing-report.pdf](https://www.ey.com/Publication/vwLUAssets/ey-3d-printing-report/$FILE/ey-3d-printing-report.pdf)

Summary – Outlook on World Robotics Report 2019 by IFR

The preliminary statistics of the World Robotics Report shows that a new record high of 384,000 units were shipped globally in 2018 – an increase of one percent compared to the previous year. This means that the annual sales volume of industrial robots increased for the sixth time in a row (2013-2018) – but only just. Source: <https://ifr.org/ifr-press-releases/news/summary-outlook-on-world-robotics-report-2019-by-ifr>

Advancing women in STEM (Australian Government 2019)

Addressing gender inequities in STEM is a key challenge not only

for Australia, but for many countries across the world. That's why there has never been a more important time for the Australian Government to continue showing leadership to drive change in our systems, institutions and workplaces to encourage and enable more girls and women to pursue STEM studies and careers. This report illustrates the Australian Government's commitment to ensure all Australians, regardless of gender, have the opportunity for rewarding, high income jobs in workplaces that value the talent and skills of their people. Source: <https://www.industry.gov.au/sites/default/files/2019-04/advancing-women-in-stem.pdf>

The future of women at work (McKinsey Global Institute, 2019) This report is part of the McKinsey Global Institute's research program on the future of work, and it focuses on how the growing adoption and diffusion of automation and artificial intelligence technologies is likely to affect women in the workforce. In a scenario where automation unfolds on the scale of past technological disruptions, women and men could face job displacement and potential job gains of a broadly similar magnitude. In the ten countries studied, an average of 20 percent of working women (107 million) could lose their jobs to automation versus 21 percent of men (163 million) by 2030. Rising demand for labor could imply 20 percent more jobs for women, compared with 19 percent for men, assuming their shares of sectors and occupations hold. Entirely new occupations will also be created, but approximately 60 percent of new US occupations have been in male-dominated fields. However, the composition of potential job losses and gains for men and women could be different. Service oriented and clerical support occupations could account for 52 percent of women's job losses, but machine operation and craft work occupations could account for 40 percent of men's losses. Women are well represented in fast-growing healthcare, which could account for 25 percent of potential jobs gained for women, while manufacturing could account for 25 percent of jobs gained for men. Source: <https://>



www.mckinsey.com/featured-insights/gender-equality/the-future-of-women-at-work-transitions-in-the-age-of-automation

Australia's automation opportunity: Reigniting productivity and inclusive income growth (McKinsey 2019) McKinsey outlines the impacts of automation across three scenarios, including slow-paced adoption, mid-point adoption and fast-paced adoption. The report sets out why and how Australia must push for the win-win scenario of inclusive growth by pursuing actions that both accelerate automation and adoption and share its benefits. Automation and AI will be disruptive, just as other technology adoptions have been disruptive in the past. While some jobs will be lost and others created, all jobs will change. As automation technologies integrate into the workforce, the mix of skills required in all jobs will shift. McKinsey analyzed the time spent on existing work activities that will be automated by 2030, including down to the local area level. Source: <https://www.mckinsey.com/featured-insights/future-of-work/australias-automation-opportunity-reigniting-productivity-and-inclusive-income-growth>

ACS Australia's Digital Pulse 2018 This edition of ACS Australia's Digital Pulse is the fourth annual stocktake of the health of Australia's digital economy, produced by Deloitte Access Economics for the Australian Computer Society (ACS). It's the most detailed examination of digital workforce trends, aimed at informing public debate about this important area of our economy. For Australia to succeed as an economy in the coming decades of the 21st century, it will need to successfully participate in the next waves of the digital revolution. This means using the creativity and skills of the Australian people; supporting the entrepreneurship and innovation of our businesses; and applying emerging technologies such as artificial intelligence (AI), machine learning and the Internet of Things (IoT). Digital success will enable growth and innovation across industries as diverse as manufacturing, agriculture and professional services. It will generate new jobs and help address a variety of social challenges, from reducing traffic congestion to delivering health services more efficiently. Source: <https://www.acs.org.au/insightsandpublications/reports-publications/digital-pulse-2018.html>



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