

## Research Article

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# Using the Business Model Canvas (BMC) strategy tool to support the Play4Guidance online entrepreneurial game

<https://doi.org/10.1515/ijtr-2017-0005>

received 10 October, 2017; accepted 1 December, 2017

**Abstract:** The Erasmus + Play4Guidance (P4G) project introduces an online business game, designed to help teach entrepreneurial, transversal and mathematical skills using a real-world business environment. This paper explains how the Business Model Canvas (BMC) strategy tool facilitated student understanding of real life business development prior to playing the game. An initial mapping exercise was conducted to find out if the Business Model Canvas could transform the experience of playing the game by providing an overview of real life business strategy, and explain the crucial role that markets and customers play in business growth. As a result of the mapping exercise a workshop session was developed to ensure that students could enact the real life business scenarios presented in the game. Three different types of videos were produced and integrated into the workshop to demonstrate key entrepreneurial competencies and graphically illustrate the nine key building blocks of the BMC. Survey responses from a student cohort evidenced that the workshop was central in helping them to understand real life business strategy prior to playing the game.

**Keywords:** Business Model Canvas; Entrepreneurial Competencies; Online Business Game; Play4Guidance project

## 1 Introduction

In 2012 the European Commission launched a major initiative called ‘Rethinking Education: Investing in Skills for better Socio-Economic Outcomes’ which emphasised that, in order to build skills for the 21st century, efforts are needed to develop transversal skills which includes “the ability to think critically, take initiative, problem solve and work collaboratively” (European Commission, 2012, p. 3). Many European countries have included entrepreneurship as a key competence in their wider education policies or developed specific strategies for entrepreneurship education. The Erasmus + Play4Guidance (P4G) project [<http://play4guidance.eu/>] recognises that in order to build skills for the 21st century efforts are needed to develop transversal, entrepreneurial and mathematical skills. Transversal knowledge and skills are relevant to a broad range of occupations and sectors; viewed as the cornerstone for personal development, these are often referred to as core skills.

The advantage of business games or simulations is that they provide a ‘learning by doing’ environment, which allows students to enact real life business scenarios. The purpose of the P4G online business game is to provide an engaging and interactive learning experience for students and young unemployed, which develop entrepreneurial, transversal and mathematical skills using a real-world business environment. The Higher Education Funding Council of England (2009) cite three different ways that technology can support teaching and learning: ‘to support existing teaching’, ‘to enhance teaching’ and ‘to transform the students’ learning experience’. In piloting the online game with students in Ireland we hoped to transform the students’ learning experience by enabling them to tackle learning activities in ways that were previously difficult to offer. The online game simulates the production cycles of a manufacturing business with the aim of maximizing the value of the company. It consists of 12 rounds representing a twelve-month period and the players or teams make

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decisions on the operational and strategic management of the company. Playing the game requires each participating student to take over and run a T-shirt manufacturing business, for a twelve-month period, including sourcing and buying raw materials, organising production operations, and selling finished goods to stores. If a student manages the business well, month-by-month the business grows; if not, the business fails.

The Play4Guidance consortium consists of 7 partners with extensive experience in pedagogical and technical competencies in online learning and games, and learning and teaching competencies in Secondary Schools, Universities and Vocational Education and Training Systems. The partners included the National and Kapodistrian University of Athens (NKUA), Greece; Dublin City University (DCU), Ireland; Tekkekoy Ilce Milli Egitim Mudurlugu (MEM), Turkey; Fondazione Politecnico di Milano (FPM), Italy; Bulgarian Industrial Association (BIA); Università Carlo Cattaneo (LIUC), Italy; Hochschule Ruhr West (HRW), Germany and Science View (SV), Greece.

This paper will discuss the visual mapping exercise, which the DCU team in Ireland conducted in order to compare the entrepreneurial competencies, which were deemed important for the P4G online game against the strategy building skills of the Business Model Canvas (BMC), and the workshop that was developed to support the game. The analysis of the business game demonstrated a production-led orientation to the design of the game and a lack of strategic decision-making based upon market information. Hence, the DCU team planned a workshop around the Business Model Canvas (BMC) and the production of three videos to further explain the BMC and entrepreneurial competences. The purpose of the first video was to explain entrepreneurial competencies within an overall business environment; and the second and third videos highlighted the importance of understanding customers, markets and competition.

This paper is organised into the following sections. Firstly, the Business Model Canvas (BMC) will be introduced and the key competencies relevant to the field of entrepreneurship will be discussed. Secondly, the mapping exercise comparing entrepreneurial competencies against the strategy building skills of the BMC will be described. Thirdly, the background and context to the workshop and the content of the videos will be explained. Finally, the methods of data collection and the feedback from a student cohort who participated in the workshop will be presented. The paper should be of interest to any teacher or trainer considering integrating the P4G business game into their teaching [<http://play4guidance.eu/p4g-business-game/>].

## 2 The Business Model Canvas, competencies and entrepreneurship competencies

The Business Model Canvas (BMC) was designed and developed by Alexander Osterwalder and Yves Pigneur (2010); its structural design and visual layout with an emphasis on functional fields of activity offers an easy way for most business managers to understand and work with the tool. The BMC demonstrates simply and clearly how a business strategy is centred around nine key building blocks, and more importantly encourages a student or business person to think about why these interactions occur and their consequences. The nine building blocks of the BMC include; Customer Segments, Value Proposition, Customer Relationships, Channels, Revenue Streams, Key Resources, Key Activities, Key Partners and Cost Structure (Figure 1). The BMC requires decisions to be made and hypotheses to be challenged and tested. It provides a fuller picture of *how a business will operate and hopes to grow in a competitive environment* rather than on narrow tactical decisions (Zott, Amit and Massa, 2011).

Coes (2014) points to the visual representation of the BMC (Figure 1) as its main strengths and its usefulness and simplicity in designing and communicating business models, and when considering profit-making organisations, its centrality of delivering and capturing value. Furthermore the tool lends itself very usefully to design, discussion and iteration of different model building options. Central to the model's beating heart is the concept of customer needs and value offerings. In essence, the Business Model Canvas is a tool that graphically maps out key structural elements and their relationships by means of spatial positioning and interconnecting flows.

Hixson and Parretti (2014) note that the BMC helped engineering students to anchor their work in the needs of their audience. These authors confirm some of the possibilities presented by Coffey & Cañas (2003) who describe how the BMC acts as a tool for collecting, organising and presenting evidence, anchoring participants in a common language, establishing conceptual relationships, testing and refining hypotheses, and supporting social interactions and meaning making. The BMC offers business owners and budding entrepreneurs options as to how best to structure their approach to business development and growth. It provides them with a single page snap-shot of their business operation, both internally and externally. It allows them to consider key operational changes without incurring penalties or wasting

time. Its predictable power helps entrepreneurs make more informed decisions thus increasing the chance of successful start-ups and sustained success. In short, it is a tool that was designed for people to engage with and use.

Competences have been defined by Pawlowski and Holtkamp (2012, p. 2) as “a collection of skills, abilities and attitudes to solve a problem in a given context”. These authors assert that context dependence means that for competence, three aspects need to be specified:

1. Which skills, abilities and attitudes constitute the competence?
2. Which problems should be solved?
3. For which context (cultural, organizational, professional) a competence is valid?

According to Mitchelmore and Rowley (2010, p. 93) entrepreneurial competencies have been identified as a specific group of competencies relevant to the exercise of successful entrepreneurship. A range of studies have explored the field of entrepreneurship and also proposed competence descriptions for the field. Mitchelmore and Rowley (2010) provide a comprehensive study with competencies grouped into clusters, which include: entrepreneurial competencies; business and management competencies; human relations competencies; conceptual and relationship competencies. Their list of competencies is derived from the research and synthesis of published papers by authors from various industries in different countries. An interesting conclusion from their research suggests that although the concept of entrepreneurial competencies is widely used in government and industry, there is little rigorous research to show the actual impact of entrepreneurial competencies.

Using a multi-round Delphi technique Morris et al. (2013) constructed a core list of 13 entrepreneurial competencies (Table 1).



Figure 1: The Business Model Canvas

The study by Morris et al. provides a comprehensive framework with a mix of different competencies. However, it was noted by the EU P4G Consortium that communications was not included in this list of competencies although it was often discussed in other frameworks. Jain's (2011) meta-analysis focused on entrepreneurship motives and characteristics, which can be seen as competencies, although the analysis was comprehensive, it did not describe the specific competencies in detail. Wu's (2009) study, 'A competency-based model for the

Table 1: Entrepreneurial Competencies

1. **Opportunity Recognition:** the capacity to perceive changed conditions or overlooked possibilities in the environment that represent potential sources of profit or return to a venture.
2. **Opportunity Assessment:** ability to evaluate the content structure of opportunities to accurately determine their relative attractiveness.
3. **Risk Management/Mitigation:** the taking of actions that reduce the probability of a risk occurring or reduce the potential impact if the risk were to occur.
4. **Conveying a Compelling Vision:** the ability to conceive an image of a future organizational state and to articulate that image in a manner that empowers followers to enact it.
5. **Tenacity/Perseverance:** ability to sustain goal-directed action and energy when confronting difficulties and obstacles that impede goal achievement.
6. **Creative Problem Solving/Imaginativeness:** the ability to relate previously unrelated objects or variables to produce novel and appropriate or useful outcomes.
7. **Resource Leveraging:** skills at accessing resources one does not necessarily own or control to accomplish personal ends.
8. **Guerrilla Skills:** the capacity to take advantage of one's surroundings, employ unconventional, low-cost tactics not recognized by others, and do more with less.
9. **Value Creation:** capabilities of developing new products, services, and/or business models that generate revenues exceeding their costs and produce sufficient user benefits to bring about a fair return.
10. **Maintain Focus yet Adapt:** ability to balance an emphasis on goal achievement and the strategic direction of the organization while addressing the need to identify and pursue actions to improve the fit between an organization and developments in the external environment.
11. **Resilience:** ability to cope with stresses and disturbances such that one remains well, recovers, or even thrives in the face of adversity.
12. **Self-Efficacy:** ability to maintain a sense of self-confidence regarding one's ability to accomplish a particular task or attain a level of performance.
13. **Building and Using Networks:** social interaction skills that enable an individual to establish, develop and maintain sets of relationships with others who assist them in advancing their work or career.

success of an entrepreneurial start-up's involved conducting expert interviews to determine important entrepreneurial competencies, lists twenty-three entrepreneurial competencies (Table 2). This list was largely derived from the study of two previously developed entrepreneurial competency models namely, the Generic Entrepreneur Competency Model developed in the USA for the purpose

**Table 2:** 23 Entrepreneurial Competencies

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1. Analytical Thinking: the ability to analyze problems systematically.
  2. Business Acumen: the ability to discover opportunities and transform resources into performance.
  3. Client Service Orientation: the ability to meet the needs of both internal and external customers.
  4. Commitment to Learning: the ability to actively pursue learning and develop competitiveness.
  5. Communication: the ability to effectively receive and express information or feelings.
  6. Conceptual Thinking: the ability to recognize patterns or trends in a problem.
  7. Order and Quality: the ability to reduce uncertainty and to control quality.
  8. Developing Others: the ability to help others make progress.
  9. Empathy: the ability to understand and respond to the concerns of others.
  10. Expertise: the ability to perform professional jobs.
  11. Flexibility: the ability to effectively adapt to a variety of situations.
  12. Influence: the ability to influence thoughts and actions of others.
  13. Information Seeking: the ability to capture enough information to increase knowledge or find solutions.
  14. Initiative: the ability to be a self-starter and to meet the challenge of higher level objectives.
  15. Innovation: the ability to make something new and to improve performance.
  16. Organizational Awareness: the ability to recognize the power relationships in organizations.
  17. Personal Motivation: the will to succeed and offer service.
  18. Relationship Building: the ability to build and maintain personal networks.
  19. Results Orientation: the ability to set performance objectives and measures.
  20. Self-Confidence: the ability to express oneself in a hostile situation.
  21. Self-Control: the ability to manage one's emotions under pressure or temptation.
  22. Team Leadership: the ability to create a favourable environment and mobilize people to succeed.
  23. Verbal and Written Communication: the ability to speak and write satisfactorily.
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of identifying potential successful entrepreneurs, and the Canadian National Research Council's Entrepreneurship Model for the purpose of supporting employees in making a successful transition to entrepreneurship in a technology or science-based business venture. Unlike Wu, each of these two models grouped competencies into useful clusters centred around the entrepreneur, operational work and task objectives.

The P4G consortium selected these 23 entrepreneurial competencies as the basis for the exploration of entrepreneurial competencies in the online game as the competencies were well described and comprehensive. The choice of this framework was not meant to limit P4G to these competencies but the categories were seen as a useful starting point for further exploration, prioritisation and validation of the online game. A key finding from Wu's study is that entrepreneurs from small firms are more concerned with, and better at, developing others within a talented team environment, whereas senior managers in large enterprises display skills at methodical thinking and finding solutions to problems. This finding can assist with shaping entrepreneurial education and training for young people.

### 3 Mapping the competencies

The P4G consortium recommended twenty-five competencies to be used in the game. These were similar to Wu's listing, but omitted the Verbal and Written Communication competency, and included three further competencies; Basic Competencies, Decision Making and Personal Determination. On close examination of the game it is clear that most of the decision-making processes centre around the factory and its productive operations, with little effort expended on understanding products, customers and markets. This production-led game design only serves to encourage more accountancy-based management thinking rather than stimulating young people to think creatively and become innovative.

A mapping exercise was conducted by the DCU team in Ireland in order to compare the 25 entrepreneurial competencies, which were deemed important for the business game against the strategy building skills of the Business Model Canvas which includes the nine key building blocks used in the Business Model Canvas: 1. Customer Segments. 2. Value Proposition. 3. Customer Relationships. 4. Channels. 5. Revenue Streams. 6. Key Resources. 7. Key Activities. 8. Key Partners and 9. Cost Structure (Figure 1).

The mapping exercise consisted of two parts:

1. Overlaying the 9 key building blocks of the Business Model Canvas strategy tool on to the 25 entrepreneurial competencies. The key building blocks are numbered from 1 to 9 and positioned against the 25 entrepreneurial competencies (Figure 2).
2. Overlaying the 25 entrepreneurial competencies on to the Business Model Canvas. The entrepreneurial competencies are numbered from 1 to 25 and positioned on to the 9 building blocks of the Business Model Canvas according to their business impact (Figure 3).

This basic visual mapping exercise showed where strong correlations existed between the entrepreneurial competencies recommended for use in the design of the P4G game and the strategy building skills of the Business Model Canvas (BMC), and where there was little or no correlation.

When examining the overlaid P4G entrepreneurial competencies grid (Figure 2) greater concentrations of business modelling strategy occurred mostly around the entrepreneur's areas of personal engagement, for example, basic competencies, decision-making, expertise, and business acumen, while much less concentrations, and in places none, occurred in the activity areas of research, teamwork and business development, for example, learning, communication, leadership, relationship building and organisational awareness. From this we can deduce that the game was designed more around the individual entrepreneur as opposed to the business. This critical finding is clearly borne out when playing the game; it is more about the manager alone making decisions as opposed to the development of the business as a whole.

The overlaid Business Model Canvas grid (Figure 3) shows heavy concentrations of entrepreneurial engagement in the areas of production and movement of goods,

for example, activities, partners and channels, while there is much less emphasis on customers, innovative products and finances. This brief analysis demonstrated a production-led orientation to the design of the game and a lack of strategic decision-making based upon market information. The mapping exercise highlights the personal engagement and drive of the entrepreneur. This should not be unexpected as entrepreneurship is often about the business owner and what he or she does or does not do. Entrepreneurship is more personal, while enterprise is more corporate. It also highlights that business development centred on a market strategy is relatively new and often neglected by small and medium sized enterprises (SMEs).

On playing the game a number of times it became clear to the DCU team that although 25 entrepreneurial competencies were recommended for use in the game, there was little evidence to show that these were realised in the playing of the game. By grouping like and similar competencies together into clusters a much shorter list of key entrepreneurial competencies was constructed. These included Decision Making, Business Acumen, Innovation, Commitment to Learning, Analytical Thinking, Order and Quality, Information Seeking, Flexibility, Expertise, Results Orientation. The 10 key competencies were presented in a short, memorable and informative video to hold the attention of a younger student audience.

## 4 Background and context to the workshop

The DCU team planned and organised a three-hour workshop for students prior to playing the online game. The workshop began with a discussion about business in general followed by an interactive exercise on the business competencies required of an entrepreneur. The students were then introduced to business planning and strategy, and how to design and build a winning business model in today's competitive business environment using the Business Model Canvas (BMC). The BMC was graphically represented on a whiteboard (Photo 1). The three videos were viewed and discussed during the workshop and used to further explain the BMC, entrepreneurial competences and to provide real life business examples. The students were then challenged to discover how they could use the BMC in their own lives. The workshop ended with an information recap and a general class discussion. In the afternoon the students played the online game.

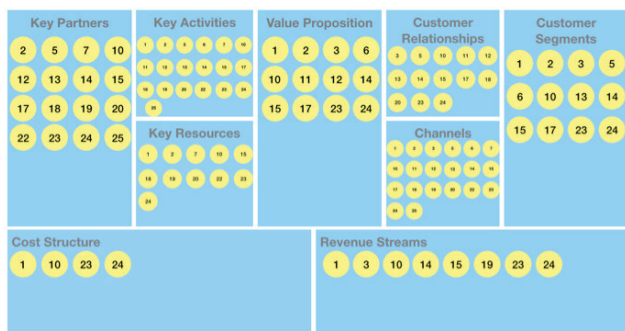
1. Analytical Thinking The ability to analyse problems systematically 1,2,3,5,6,7,8	2. Business Acumen The ability to discover opportunities and transform resources into performance 1,2,3,4,5,6,7,8,9	3. Client / Service Orientation The ability to meet the needs of both internal and external customers 1,2,3,4,8	4. Commitment to Learning The ability to actively pursue learning and develop competitiveness 1,2,3,4	5. Communication The ability to effectively receive and express information or feelings 1,2,3,4
6. Conceptual Thinking The ability to recognise patterns or trends in a problem 1,2,6	7. Order and Quality The ability to reduce uncertainty and to control quality 6,7,8,9	8. Developing Others The ability to help others make progress 6	9. Empathy The ability to understand and respond to the concerns of others 1,2,3,4,5,6,7,8,9	10. Expertise The ability to perform professional jobs 1,2,3,4,5,6,7,8,9
11. Flexibility The ability to effectively adapt to a variety of situations 1,3,4,6,7,8	12. Influence The ability to influence thoughts and actions of others 1,3,4,6,7,8	13. Information Seeking The ability to find and capture information to increase knowledge or find solutions 1,4,5,6,7	14. Initiative The ability to be a self-starter and to meet the challenge of higher level objectives 1,2,3,4,7,8	15. Innovation The ability to make something new and to improve performance 1,2,3,4,6,7,8
16. Organisational Awareness The ability to recognise the power relationships in organisations 6,7,8	17. Personal Motivation The will to succeed 1,2,3,4	18. Relationship Building The ability to build and maintain personal networks 4,6,7,8	19. Results Orientation The ability to set performance objectives, resulting targets and measures 2,3,5,7,8,9	20. Self Confidence The ability to express oneself in different / hostile situations 4
21. Self Control The ability to manage one's emotions under pressure or temptation 2,6,7	22. Team Leadership The ability to create a favourable environment and motivate people to succeed 2,6,7	23. Basic Competencies Ability to apply basic knowledge needed for running a business 1,2,3,4,5,6,7,8,9	24. Decision Making Ability to make decisions 1,2,3,4,5,6,7,8,9	25. Personal Determination Ability and attitude to reach given objectives 1,2,3,4,6,7,8

**Figure 2:** Overlaying the 9 building blocks of the BMC on the 25 entrepreneurial competencies

Video was chosen as the preferred medium for the educational resource because it aligned well with the online mode of the P4G game, and the age profile of the players, and the ease with which it can be used within a classroom environment. There is research supporting the arguments for using video in education. Koumi (2006) describes how video techniques enable students to acquire robust cognitive structures, realistic experiences and desirable attitudes/ appreciations. More recently, Willmot, Bramhall and Radley (2012) show that there is strong evidence that digital video reporting can inspire and engage students when incorporated into student-centred learning activities. The purpose of the first video was to explain entrepreneurial competencies, and its place within an overall business environment; and the second and third videos highlighting the importance of understanding markets, customers and competition, which was lacking in the P4G online game. The first video combined colour, characters and upbeat music; while the third video used live footage of young children riding their ponies. By creating an engaging learning environment around the theme of business and enterprise, students can acquire thoughts and ideas that they can recall and use beneficially when playing the game. The educational video resource was also designed to allow students to learn more about the curriculum subject of business, and better enjoy playing the game.

#### 4.1 Video 1. Entrepreneurial Competencies

Animation videos are widely used in business and educational scenarios to help explain topics or subjects. It was important to inform the students about the ten key competencies in a language and style appropriate to their environment. The first video was produced using a relatively new animation software programme called PowToon. A short explanatory script for each of the ten entrepreneur-



**Figure 3:** Overlaying 25 entrepreneurial competencies onto the Business Model Canvas

ial competencies was uploaded into a series of slides. There is a guitar music track, characters to help tell the story, and emphasis is placed on key words and phrases through the use of different fonts, sizes and colours, juxtaposed on various slides to keep it interesting. The video can be accessed at <https://www.youtube.com/watch?v=K-cy9rFFowVU>

#### 4.2 Video 2. The Business Model Canvas

The purpose of the second video is to graphically illustrate the Business Model Canvas (BMC). It was decided to create a unique educational video explaining the Business Model Canvas using words, language, phrasing and an accent that a young audience could readily understand. While scripting the second video business words such as strategy, planning and modelling were not used. Instead it was agreed to focus on the message to inform the students about what it was like to start a business or develop a new product. This video was produced using a different animation software programme called Moovly. It can be accessed at <http://goo.gl/6tBxSy>

#### 4.3 Video 3 – Riding Hats

A more authentic, meaningful and engaging explanation was used in the third video to ensure the students connected with key aspects of business development. It was meant to help students to learn about business, and absorb important information that would help them much later with their studies and examinations, as well as enjoy playing the P4G game. This was an opportunity to highlight building blocks from the Business Model Canvas and to demonstrate two of the most fundamental aspects of business development Customer and Value Proposition in a way that would make sense to the young students.



**Photo 1:** Photo of workshop with Transition year students

Furthermore, to help reinforce the Value Proposition (that is the product offering) a sales assistant was filmed as she dealt with the Customer, because the information she provides as she fits the riding hats is an important part of the sales process. The product may meet the Customer's needs, but the service element can help make or break a sale. The final part of the video, showing the manufacturing and testing of the hats, helps allay the Customer's concerns regarding quality and protection. This is also part of the Value Proposition that involves understanding and satisfying a Customer's needs so that s/he will buy the product. The video can be accessed at <http://goo.gl/vC98NR>.

## 5 Reflections from students

The DCU team organised three workshops for students between January and March 2017. The student groups consisted of a Transition year group, Leaving Certificate Business Studies group and an Undergraduate Business Studies group. Transition year is an optional one-year school programme for post-primary students in Ireland that can be taken in the year after the Junior Certificate (12-14 years of age) and is intended to make the senior cycle a three-year programme encompassing both Transition Year and Leaving Certificate (15-18 years of age). The Leaving Certificate is the final examination in the Irish secondary school system. It takes a minimum of two years preparation, but an optional Transition Year means that for those students it takes place three years after the Junior Certificate Examination.

A post-questionnaire was completed by the groups with the following questions: 1. What did you learn from the presentation of the Business Model Canvas? 2. How did the real life example of purchasing pony-riding hats assist your understanding of the Business Model Canvas? 3. How might the Business Model Canvas help you when studying business as a subject? 4. What topics in your business curriculum can you see the Business Model Canvas link to? The students completed the questionnaires at the end of the day, that is, after participating in the workshop and playing the game. A summary of the findings from the questionnaires completed by the Transition year students after their workshop on 27 January 2017 will now be presented.

The Transition year students liked the video presentation of the Business Model Canvas presentation (video 2) because it used simple and clear headings, which they could understand. It demystified business

planning. They learned that there are many things to consider when starting a business, such as funding, suppliers, product quality and customers and that all of these things are closely related. They recognized that finding and understanding customers are crucial to business success. For these students, the example of purchasing pony-riding hats (video 3) was visually appealing and provided a true perspective on a real life business transaction. It gave them an insight into the marketing and selling of a product. It also showed how at times quality could be more important than price. This appeared to be a surprising factor for many of the students. For some it brought the Business Model Canvas to life in a simple and understandable way.

The Business Model Canvas presentations in videos 2 and 3 helped their understanding of marketing in particular. It offered a fresh and different view of customers and their needs. It also helped reinforce earlier learning in their business studies class on topics such as sole traders, entrepreneurship, marketing and business management. In referring to curriculum topics already covered, one student commented that the Business Model Canvas showed how these topics actually worked within a business, and improved her understanding of them.

When asked about the three things they learned from class, the students learned that when presenting information, clear communications is very important and that the use of visuals can often say more than text. They also learned important facts about improving the operational side of a business, such as purchasing quality raw materials, investing in latest machinery, and training employees. Many students found the competencies video (video 1) to be of great benefit. The Business Model Canvas (video 2) provided a simple and clear blueprint for students to turn their ideas into fledgling businesses. Students also learned that running a business can be a tough job, and that most decisions carry an element of uncertainty and risk.

## 6 Conclusion

The intention behind the P4G game is to educate and guide students and young unemployed in entrepreneurial, transversal and mathematical skills. Early research by the DCU team showed that the game required more engagement with modern business development strategy. These findings provided the impetus to design a suitable workshop and educational videos to ensure students were well prepared for the game and to enable them to tackle

learning activities that have been previously difficult to offer. Video was chosen as the preferred medium for the resources because it aligned well with the online mode of the P4G game, the age profile of the players, and the ease with which it can be used within a classroom environment.

The literature on entrepreneurial competencies helped to map the competencies against the Business Model Canvas (BMC) and showed that most of the decision-making processes in the game centred around the factory and its productive operations, rather than on understanding products, customers and markets. This visual mapping showed where strong correlations existed between the entrepreneurial competencies recommended for use in the design of the P4G game and the strategy building skills of the Business Model Canvas, and where there was little or no correlation.

Findings showed that the students enjoyed the workshop experience especially playing the game and managing their own virtual business, brainstorming with their classmates on new ideas, watching the videos, and learning about entrepreneurial competencies and the Business Model Canvas. Quoting one student, "I thoroughly enjoyed the day as I wasn't expecting to learn about how a business is run as I initially thought that we would only play the game."

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