

How can designing infographics in response to an economic problem promote boys' creativity?

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Abstract

In the current educational environment, policy makers are urging schools to develop critical and creative thinking in students to enable them to become problem-solvers in real contexts. With ubiquitous technology, the possibilities for fostering creativity as problem-solvers are expanding. Following an action research methodology, we investigated how designing infographics can promote creativity in responding to an economic problem. Working with a group of 49 students in Year 11 Economics, our intervention targeted how the affordances of technology could provide opportunities for communicating complex economic data clearly and succinctly. To design an infographic that achieves this requires creativity. Using pre and post-test surveys and focus group interviews, we found that creativity was associated with notions of freedom, challenge and collaboration. Furthermore, responses to economic problems were more memorable and comprehensible for an audience when infographics were creatively designed. The process of designing an infographic promoted not only a deeper understanding of the economic problem but also the students' creativity in communicating a response to it.

Introduction

The core operations of Brisbane Grammar School centre around the values of endeavour and learning. As educators, we continually seek to develop the attitudes, skills and knowledge as a foundation for critical intelligence, imaginative powers and creativity. Furthermore, we strive to develop in our student's, effective communication skills and the capacity and enthusiasm for independent, life-long learning. Underlying our pedagogy is the belief that we can explicitly teach higher-order thinking skills; a belief that is reflected in our teaching and learning framework, Dimensions of Learning. Since 2008, the School has been incrementally implementing a 1:1 tablet PC program, with the current Year 11 students being the first cohort of senior students with their own computer. As such, the need to reconsider not only our pedagogy but also how our students continue to develop their thinking skills is a

priority. In particular, we were interested to investigate how technology can foster our students' creativity.

Our Action Research Project focused on the question: How can designing infographics promote creativity in responding to an economic problem? This focus is based on a hunch that students may improve their understanding and communication of an economic problem by designing infographics, which are a creative method of visually representing information with technology. The techniques used to prepare an infographic serve two distinct purposes. Firstly, designing an infographic is an open-ended task in which students can be creative by individualising their response. Secondly, for students to prepare and communicate a purposeful infographic, they need to understand economic patterns and trends in depth to express data in a creative manner. In short, infographics have the potential to appeal to our students not just as visual learners but also as creative problem-solvers.

Literature Review

At a time when pressure surrounding standardised testing is increasing, fostering creativity in the education system is a challenge (Shaheen, 2010). Part of this challenge is the trend away from viewing education as contributing to a society that values specific skills and knowledge acquisition, to a broader notion of a knowledge economy, which values human, social and creative capital (Peters, 2010). In this context, creativity has become a central concern in educational policy documents, curriculum and pedagogy (Shaheen, 2010). Added to this, technology provides opportunities for students to be part of the “economy of ideas” or “digital capitalism” (Peters, 2010, p. 70), particularly in the area of design.

While creativity has largely been ignored as an area of interest in the study of Economics (Galenson, 2010), it is seen as having a “critical role in the economy” (Burnard, 2006, p. 313). Studying the subject of creativity and learning how to be creative, notes Burnard, are arguably key priorities in the field of economics. Furthermore, there is a shared view that “creativity, design and innovation are at the heart of the global knowledge economy” (Peters, 2010, p. 69). In particular, it is argued that human creativity is the “ultimate economic resource” (Florida, as cited in Clinton & Hokanson, 2012, p. 112). With technology, opportunities exist to build what Cropley and Cropley (2010) call “functional” creativity, which emphasises practical problem-solving. Indeed, designing with technology can reveal “dimensions of the creative potential of children that would remain hidden in much of the rest of the curriculum” (Lewis, 2005, p. 43).

Within the classroom, establishing a learning context that is conducive to creativity is reflected in not only the pedagogical approach (Lewis, 2005), but also the social environment (Cropley, 2006). Lewis (2005) asserts that learning activities should be geared towards problem-finding before problem-solving, as an understanding of how a problem is conceived is an important part of designing a creative solution. Designing, as a means of creative problem-solving, can be considered as a looping, creative cycle from which novel ideas emerge as progress is made (Clinton & Hokanson, 2012).

Encompassing the cognitive aspects of creativity is the social context in which the learning occurs. While studies suggest that creative work happens in environments that balance individual freedom with challenge (Amabile, 1998; Lewis, 2009; Clinton & Hokanson, 2012), Cropley (2006) argues that creativity should be viewed as a social phenomenon, not just an individual pursuit. As such, teachers have an opportunity to establish behavioural and attitudinal norms in their classrooms that encourage creativity. Furthermore, notes Cropley, the teacher has a responsibility to model norms such as "tolerance, openness, and flexibility." Role-models, mentors and supportive group processes are just some of the ways teachers can influence social support factors.

Research on designing infographics is scarce. While some books and websites extol the benefits of infographics (Schrock, 2012; Smiciklas, 2012), no formal, peer-reviewed research can be located. Nevertheless, the design challenge of a successful infographic is to explain a concept with brevity, insight and accuracy so that the reader can engage with the information and understand it efficiently (Smiciklas, 2012). Through this research project, we hope to help fill the gap in the literature by focusing on designing infographics as a creative process.

Research Context

The participants in this study were students at a large metropolitan independent day and boarding school in Australia. The school caters for approximately 1400 boys in Years 6 to 12. The participants of our Action Research Project were from two classes of Year 11 Economics ($n = 49$). These students were aged 15 to 16 years old and were studying Economics for the first time. At the time of the intervention, they were approaching the end of their second semester of a four semester senior course. They attended four classes of Economics each week, with each class approximately one hour in duration.

By this stage in their course, the students understand the Economic Inquiry Process, which is a unique process used in all research assessment in Economics, and they applied this process to investigate an environmental economic problem. These students were also the first cohort to undertake the senior course with their own tablet PC. As such, this intervention capitalised on the opportunity to redesign an existing assessment instrument that lends itself to creative expression with technology.

The Action

Prior to our intervention, we gained informed, written consent from both the students involved and their parents/guardians. Students were given the opportunity to read an information sheet and sign a consent form before seeking their parents' approval. It was made clear that they could withdraw their participation in the research at any point. The participants were also assured that their identities would not be revealed, and the information we collected would be confidential.

Our action targeted the design process and use of infographics to research, explain and present an environmental economic problem as part of a research assessment task. The intervention was staged during three separate Economics lessons over a three week period. Teaching of 'regular' course content continued during the other lessons in the three week period. During the first week, the students were introduced to the concept of infographics. The boys were given an opportunity to review and evaluate a variety of professionally designed infographics to identify different techniques for displaying data and to become familiar with the generic patterns and conventions of infographic design. The students evaluated the effectiveness of different techniques based on the extent to which they were creative and clear in communicating information. By Week 2, the students had an opportunity to explore infographic design tools, such as *easel.ly* and *PowerPoint*, to learn some capabilities and limitations of the technology. Students then started to design their infographic to represent their economic problem and the research they had undertaken. The final lesson focussed on peer review, feedback and reflection of individual student work.

Data Collection

We used a variety of data collection techniques to gather qualitative and quantitative data. Initially, we surveyed students (pre-survey), via the school's learning management system, on their understanding of creativity and perceptions of their own creativity, particularly in relation to the use of technology. We also asked them to explain how they perceived creativity in the context of Economics. Some questions were open-ended, while others prompted them to choose a response on a Likert scale (see Appendix A).

During the course of the intervention, and to target how creativity was promoted, we expanded our data collection to include classroom observations, which were recorded as file notes. At the conclusion of the intervention, we again surveyed students (post-survey) and asked them to reflect on the design process and to revisit some of the questions we asked in the pre-survey (see Appendix A).

We also conducted two semi-structured focus groups (each with five students) at the end of the intervention to review the design process and probe their understanding of creativity. Attendance was voluntary and discussions were video-recorded. By using student voices as data, we aimed to ensure the authenticity of our research and provide further triangulation of the evidence. The focus groups and observations, in particular, aimed to provide an insight into their metacognitive strategies and individual decision-making process to solve problems.

As teacher researchers, we also made interpretive insights based on our observations in the classroom and during the focus groups.

Data Analysis

Data collected from the pre-survey and post-survey were exported from our learning management system to Microsoft Excel for analysis. This allowed us to extract the comments from open-ended questions as well as analyse the qualitative data. Due to student absence, we only had 40 students respond to both the pre-survey and post-survey. Only these 40 responses were used to analyse data from questions relating to any perceived change after the intervention; however, all responses were considered when analysing open-ended questions. We also transcribed the video-recorded focus groups, identifying students by labelling them Participant A to Participant J.

Looking over all the data, we searched for common comments and identified five broad themes: Creativity and Freedom; Creativity and Challenge; Responding to the Economic Problem; Creativity and Technology; and Creativity as a Collaborative Endeavour. Comments that did not fit within one of these themes were deemed irrelevant to the research topic. We then highlight and sort comments under these themes. The coded qualitative data and consolidated quantitative data were then analysed, compared and linked to identify the common findings.

Discussion of Results

Our intervention yielded results that reflect the challenges and successes of the task. Moreover, the data reveals not only the variance in how students perceive themselves as being creative but also the impact that individual learning preferences have on their engagement with the task. Each of the five themes provided the framework for the discussion of results.

Creativity and Freedom

Freedom is often associated with creativity, particularly as a means of fostering the requisite intrinsic motivation to generate ideas and fulfil a purpose (Amabile, 1998). Specifically, the students' comments highlight how creativity emerges from the freedom associated with the design process, rather than the eventual product. As Amabile (*ibid.*, p. 82) found, "giving people freedom in how they approach their work heightens their intrinsic motivation and sense of ownership".

The students reported that designing infographics afforded them freedom that they had not previously enjoyed in traditional tasks, revealing both their autonomy and a belief that creativity comes from an environment that has few constraints. For example, Participant A expressed that "*creativity... means to have a minimal amount of restrictions, and that was really apparent in the infographic*". Participant B enjoyed that "*there was no template*", which enabled individual students to be "*as creative as you wanted*" with, as Participant C said, "*the freedom to change [the infographic] to [show] whatever you want*". Participant D's reflections emphasise the novelty in designing an infographic:

The majority of our assessment tasks are based around cold, hard facts ... set out in an academic format. I suppose you get a little bit away from this with multimodal presentations in various subjects. I think this was a whole different area that a lot of us had not explored before.

Throughout the process, the students found that creativity and freedom became intertwined in how they investigated their economic problem to produce ‘data artwork’. Showing an awareness of how a creative design can help comprehension of an economic problem, Participant D advised that he used creativity in the:

positioning of the information ... [and] the way that you used the infographic techniques. Rather than have a boring fact, maybe having a picture to relate it to. Once you have all these things, making a creative way in which to make the information flow and seem logical from your causes to your effects to your solutions. It required a little bit of creativity in how you did that, whilst making it look good and making sure it made sense

Some saw the freedom to design different ways of displaying information the most striking creative component of the task. Participant E commented, “*I don’t think the poster as a whole was the main creative part. The actual individual infographics, like finding the best ways of showing things with variety and not just a bar graph.*” Furthermore, the student responses show that individual expression and autonomy are both key attributes of a creative task. Participant B summed up the task by saying that “*it allowed for people’s individual point of view to be shown. That sort of freedom... it let you be individually creative [in responding to an economic problem]*”.

Overall, the freedom the students experienced in designing their infographic gave rise to a perception that they could be creative. This freedom may account for what Howard-Jones (2002) refers to as a generative phase of creativity, in which ideas are formed in an unfocused or non-linear way, before being evaluated and analysed.

Creativity and Challenge

As with any new task, students found the design process to be challenging, particularly in terms of their approach to the task, their individual perceptions of creativity and their time management. Additionally, the challenge of expressing relevant information in a creative and coherent way that responds to the economic problem was apparent.

The key difficulties in how to approach the task, as reported by the students, stem from its perceived uniqueness and novelty. Participant E said that *“with the speech and the assignment, it is all structured academic work... We have all done written assignments a dozen times before so we did that really easily and did our speech really easily. But we’ve never seen an infographic before or created an infographic attribute in an academic subject before. That is where people struggled.”* Participant D found that *“you had to really think about what you were going to put on the infographic in terms of ... causes and effects... What information was best. [You had to think about] what is the most important part of what I have to do and what information can I build on and add to what I already have”*. Upon reflection, Participant I realised that *“the [research] process is still the same with the research and the graphic organiser.”* From our own observations as teacher researchers, we noted that the students could easily explain what they needed to do for the task and identify the strengths of professionally designed infographics; however, their ability to apply their understanding and represent it in a novel way was initially challenging.

The students found that the infographic task challenged their own perception of how creative they were. Figure 1 below shows results of the survey taken before and after the task, asking students to rate their creativity on a Likert scale. Approximately 70% of students reported that they thought their level of creativity stayed the same or increased during the task.

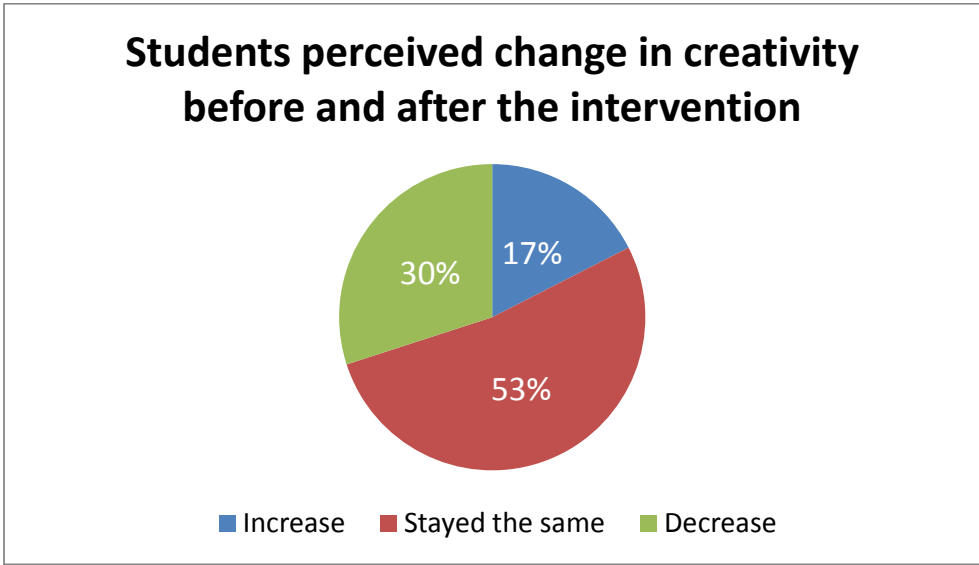


Figure 1: Post-survey results comparing perceived change in creativity (n = 40)

Figure 2 breaks this result down into the various categories of perceived creativity. The results show that there are students in each category who realised they were not as creative as they first thought at the commencement of the task. Based on our observations and the comments from focus groups, this is perhaps due to the challenge of the task and the restrictions they felt with time.

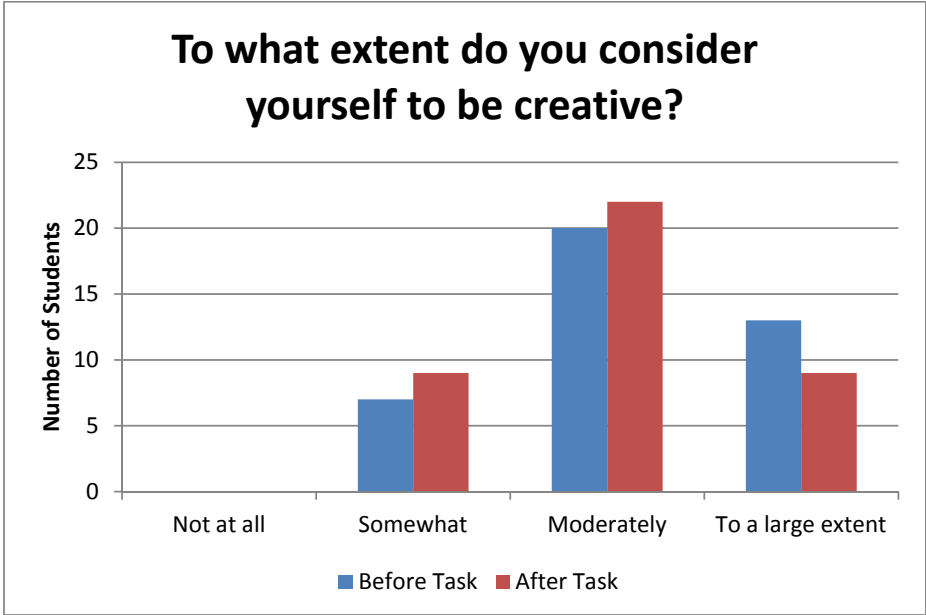


Figure 2: Survey results indicating perceived degree of creativity before and after intervention (n = 40)

Creative tasks can take time. Participant C explained that his process for creating a design was limited by what he could find: *“I had in my mind's eye that I wanted it to be perfect... It wasn't so much the creation; it was finding the stuff which I needed to create it... I'd read a fact and think 'this would be a really cool way to display that'. Now, okay, I go through ClipArt and there's no little symbol for it, then I'd go to Google...And I've already spent half an hour looking for one image.”* Participant B expressed that part of the challenge was in knowing how and when to settle on a design decision: *“It was very time-consuming I really liked the creative challenge... I just want to get to an end point in the most practical way possible... You get to the end and it's like 'oh it's good, but I could change this and that'. That's why I spent so much time on it.”*

Overall, the students found the task to be challenging but ultimately rewarding. With no definite structure to design the infographic, it was perhaps more difficult and time-consuming than students realised to be creative.

Responding to the Economic Problem

Throughout the intervention, we observed that the students were diligent in researching and finding evidence which supported their point of view. The design process prompted students to consider how the technological affordances could help them synthesise and represent their economic issue. Part of this also involved being aware of their audience—in this case, their peers—and ensuring that their information was efficiently and creatively expressed.

Participant F explained that *“with an infographic, you want to display evidence to support what you are doing. You didn't want have a general statement that you might have in a [traditional] assignment. It opened up a wider array of evidence you [should] use.”* According to Participant G, designing an infographic *“made you want to look up information you wanted to find out. You could look up some cool statistics that people could relate to. Especially with the topic of the task, Environmental Economics, it relates to everyone.”* Participant A confirmed this:

Not only did it make us understand it, it made us analyse it better. We were able to comprehend what was going on... For example, if it was a statistic like 1 in 5, it meant a lot more to me when I saw one person coloured in five. It actually made me think 'Oh my gosh, that's actually quite a lot' ... [So] you had to be really selective with your facts... Sometimes you had to choose which facts were the most easily representable on an infographic.

As part of the task, the students were required to present their infographic to the class. Comments from the focus groups show that while infographics in general made comprehension of the economic problem somewhat easier, the more creative designs were not only more memorable but more effective in communicating information to the audience. Participant A confirmed this by stating that in using an infographic, "*people took more notice of your information.*" Participant H concurred, saying "*it was more interesting. So when you listen, even if you don't really pay much attention you can just look up just a second and absorb the facts and gain an understanding of the topic.*" Participant B commented, "*if you do it well, it's really easy [for the audience] to digest.*"

By the end of the intervention, the students' explanations of what creativity means in the context of Economics had altered. Data from the pre-survey foregrounded novelty and innovation with problem-solving; in other words, they identified that creativity was about doing things in different ways. In contrast, comments from the post-survey more frequently emphasised how creativity is evident in the interpretation and communication of economic concepts to engage stakeholders. Combined with the data in the focus groups, this increase in specificity may be explained by their personal experience of both designing the infographic and consuming, as a member of the audience.

In summary, the use of infographics provided both the students and their audience with a deeper understanding of their economic problem than a traditional research assessment task because their engagement with information was seen as a social, collaborative meaning-making process. As Participant A responded, "*the incorporation of the infographic, I think it made us think in a different way - a better way. It made us connect with not just the teacher, but how other people would look at our work. That's what I enjoyed.*"

Creativity and Technology

In general, students found that technology helped them to complete the task in a creative manner. The process of creating an infographic is inherently one that involves technology. While there was no requirement to use a particular tool or piece of software to create the infographic, we guided the students through two options to create their design. The first, which was a web-based tool called *easel.ly*, offered a professional look but was somewhat inflexible due to its template-based framework. *PowerPoint*, on the other hand, offered flexibility and freedom, which in turn created more design choices for the students.

During the process, we found that all students had used PowerPoint before, but none of them had used *easel.ly*. However, there were a number of techniques that we taught the students that they had not previously explored in PowerPoint. Participant I said that he “*struggled with the design and the technology and the aesthetics.*” Participant F commented, “*I’m no artist, but ... I used *easel.ly* because I thought it looked more professional as opposed to PowerPoint... Fitting it all in was definitely my struggle.*”

Students used different technology for different parts of the task, showing flexibility and an ability to be adaptive. Participant D, as a student who used both programs, explained why he combined the two:

I used Easel.ly for...the professional look which it is designed to do. I play[ed] around on PowerPoint, which at times was a little bit more tedious, but I think it allowed me a bit more freedom to use both... The technology allowed me to be a little bit more creative with using different programs.

Some students, being aware of their own limitations, recognised that technology compensated for some of their weaknesses, thus giving them access to a creative expression that would otherwise have been difficult. Participant F reported that, “*the technology helped for sure... You can manipulate [information] easily... I can’t draw... Being able to move it around anyway you wanted. For me, getting my message across and making it look good in terms of the creative element was really difficult.*” Participant J concurred, saying, “*the technology gave me more opportunity to be creative because you can just fiddle around with controls and the options... So if you know about those basics, you can create more complex, more effective infographics. That's what leads you to your creativity.*”

One student (Participant E), who identified himself as being more artistic, argued that he would prefer to use traditional methods for the design process. He made his preferences clear:

I prefer it on paper like drawing. If you make a mistake you can rub it out. It would be a lot easier to lay out what you want if you can be like ‘I can have this here, I can have this here’ instead of setting the text box back and bringing this to the front and saving the background colour and changing your font. Or you could just write it as big as you wanted in the style you wanted.

Participant E also acknowledged that “*PowerPoint was more flexible with where you wanted things and how you wanted things,*” and stated that, “*the infographic was a lot easier to make and show information and also to absorb information than a [traditional] assignment.*”

From our survey results (Figure 3) we found that 67% of students reported that they thought their level of creativity using technology stayed the same or increased during the task. While this result is similar to Figure 1, we suggest that the challenges discussed above would account for the slight decrease.

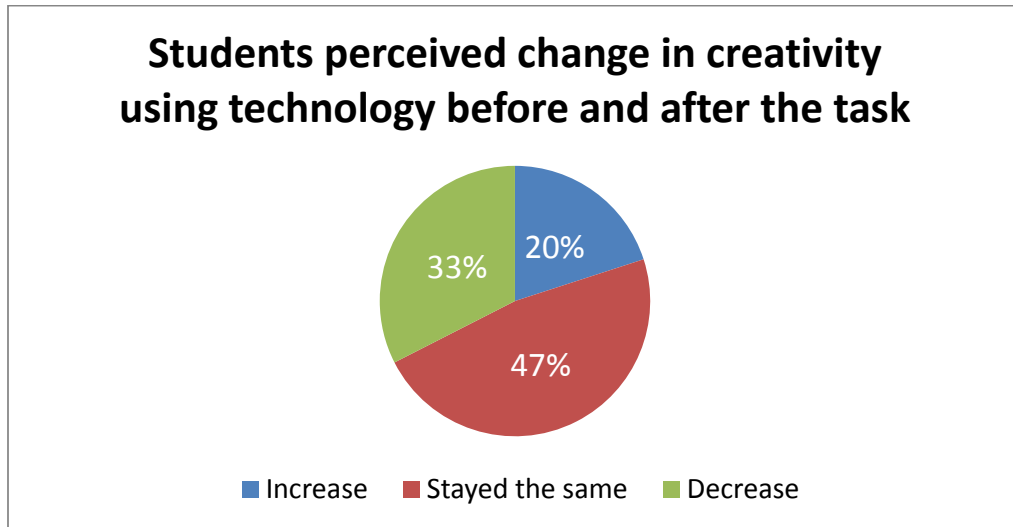


Figure 3: Survey results indicating students' perceived change in creativity using technology (n = 40)

Figure 4 breaks this result down into the various categories of perceived creativity using technology.

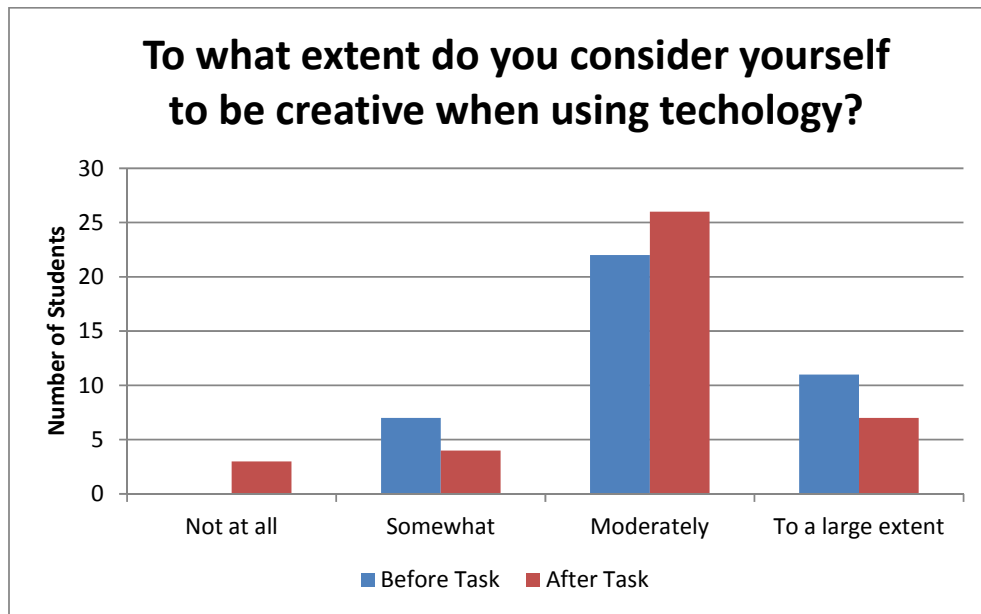


Figure 4: Survey results indicating students' perceived change in creativity using technology (n = 40)

Generally, the students found that technology enabled them to be creative and present a more professional outcome in explaining their economic problem. The data suggest that technology facilitated flexibility in thinking and provided more options to represent information creatively. The use of new technology, or technology in new ways, however, challenged the students' perception of how creative they thought they were.

Creativity as a Collaborative Endeavour

During the intervention, we facilitated collaborative learning in several ways. Initially, this was undertaken as peer reviews of the draft infographics whereby students completed a feedback form on another student's work. Also, when the students had completed the task, they presented their infographic to the class in a five minute presentation.

The students providing feedback took on this role with a degree of seriousness and responsibility. We noted in our observations that students discussed their infographics in depth and used the opportunity to solve problems together. According to Participant B, "*The peer reviews were a big help. I know if I did it myself, it wouldn't have been as good.*" Participant A concurred, saying that "*it did more good than harm to look at other people's*

work.” As such, it was evident that the social environment was conducive to collaborative problem-solving, or what Cropley (2006, p. 129) describes as a “creativity-facilitating social climate,” where “variability is welcome” and there is a “tolerance for novelty”. Nevertheless, we observed that some students found feedback too confronting. As we also saw in the early stages of the intervention, some students are very capable at identifying problems in others’ work, but they struggle to identify the same issues in their own.

Our observations also recorded that the students were more engaged as audience members in the presentation of other students’ work. According to Participant B, *“part of the task was note taking from everyone’s speech and generally when you listen to a class full of speeches I don’t absorb a lot of the information. For me, from these infographics it was really easy to take notes, and I can remember things from people’s speeches, which isn’t usually the case”*.

In short, while each student undertook a different topic, which may account for an increased sense of ownership, there is evidence to suggest that working collaboratively enhanced the design process. In particular, feedback gained from peers helped students gauge how effective and engaging their creative response to the economic problem was. The behavioural norms that were established throughout these collaborative experiences facilitated their creativity.

Conclusion

Designing infographics proved to be a challenging creative process. As students progressed through the different stages of their thinking, from inquiring into the economic problem to communicating their understanding, the challenge to design an effective, purposeful infographic became more complex. Our hunch that using technology to create a visual response to an economic problem would promote creativity held true.

Students appreciated the freedom in both the design process and the product. Working on an open-ended task without a template required creativity in how they organised information, represented data and captured key economic issues for an audience to grasp. To work with the generic limitations of an infographic and communicate information with impact, the students collaboratively problem-solved and critiqued each other’s work to ensure that meaning was conveyed. As such, the students’ understanding of creativity became more about ‘doing things differently’ to engage and connect with an audience.

Technology was central to the students' design process. It contributed to the range of options for visually representing information, as well as providing flexibility in how information was arranged. The students largely believed that technology enabled them to be creative and thus able to respond to their economic problem purposefully.

As teacher researchers, we have embraced our initial hunch. We will continue to use and design infographics to promote creativity in responding to economic issues. Knowing how time creates a challenge for the students, we will make appropriate adjustments to enable them to explore all creative options and seek feedback from peers. To enrich the task further, more methods of using technology for peer feedback and collaboration will be investigated. Also, with a more deliberate social approach, the combined problem-solving efforts may contribute to more creative responses.

While infographics continue to be popular in social media, there is still very little research into them, particularly in an educational context. Based on our intervention, opportunities exist to investigate the effectiveness of different design tools and the potential for further engagement by animating elements of the infographic. Separately, there is scope to research the various literacies, and in particular visual literacy, that are employed in designing and interpreting infographics. Finally, as more ready-made infographic templates become available, there will be ongoing interest in how these influence creativity.

Reflection Statement

As newcomers to action research, we found the process to be rigorous and rewarding. As a methodology, action research allowed us to act on our instinct as teachers and capture evidence of learning in practical ways. While we are both subscribers to continual professional learning, we often innovate 'on the go' and have not historically carved out specific time to reflect, evaluate and implement change. Our deliberate and structured approach to this project gave us the opportunity to plan thoroughly and monitor our progress regularly. We realised that we were reflecting just as much on our own learning as we were on the data collected from our students.

Working collaboratively has been a highlight of our project. Too often as teachers, we work in isolation and miss opportunities to enrich the teaching and learning in our classroom. Being able to draw on each other's experience and ideas added depth to our approach, and

being together to share each stage of the research process ensured that we could observe, question and problem-solve collaboratively.

Importantly, one of the most interesting and affirming aspects of our research came from the students. Particularly with the focus groups, being active listeners and probing their thoughts and perspectives was enlightening for us as educators. What was clear to us was that students have a desire to offer feedback to ensure that future iterations are even more successful. The students were honest in sharing their experiences from beginning to end, demonstrating a sincere belief in ongoing improvement. The learning story told in the student voice is invaluable. Students, after all, are the reason we teach.

Acknowledgements

We would like to thank the IBSC for giving us the chance to work on this Action Research Project as a team. It has been a professionally rewarding collaborative experience. We extend a special thank you to our Headmaster, Mr Brian Short, and Deputy Headmaster – Teaching and Learning, Mr Steve Uscinski, for giving us the chance to challenge ourselves. Thank you to Trish Cislak, our mentor, whose wise words and Skype sessions maintained our sanity and gave us motivation. Most importantly, we thank our student participants, who were so open and honest with their feedback, comments and sense of humour throughout the project.

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Appendix A - Pre-survey and Post-Survey

Pre-Survey

The following “Pre-survey” was administered before our intervention in October 2012.

Question 1

How would you define creativity? Be as specific and detailed as possible.

Question 2

To what extent do you consider yourself to be creative?

- Not at all
- Somewhat
- Moderately
- To a large extent

Question 3

To what extent do you consider yourself to be creative when using technology?

- Not at all
- Somewhat
- Moderately
- To a large extent

Question 4

What do you think creativity means in the context of Economics?

Question 5

Do you think creativity contributes to problem solving?

Post-Survey

The following “Post-survey” was administered following our intervention in November 2013.

Question 1

Having completed your Infographic, how would you define creativity? Be as specific and detailed as possible.

Question 2

Since completing your task, to what extent do you consider yourself to be creative?

- Not at all
- Somewhat
- Moderately
- To a large extent

Question 3

To what extent do you consider yourself to be creative when using technology?

- Not at all
- Somewhat
- Moderately
- To a large extent

Question 4

What do you think creativity means in the context of Economics?

Question 5

Do you think creativity contributes to problem solving?

Focus group questions

1. What did you enjoy about the task?
2. What did you not enjoy about it?
3. Did you find it challenging?
4. Did you find the creative component of the task challenging?
5. Do you find technology helpful or a hindrance in producing something creative?
6. Did the creative element of this task make it more engaging for you?
7. When you watched other's presentations, what were the most memorable infographics?
Why?
8. By designing your infographic, did it increase your understanding of the economic issue?
9. In viewing other infographics, was it easy to understand their economic issue?
Why/how?
10. Do you think being a creative thinker is valuable in the real world of business (and Economics)?
11. Did any collaborative experiences help or hinder your creativity?