The application of VARK learning styles in introductory level economics units

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The issues of developing strategies and approaches to teaching introductory level economics courses at university have been long standing. With the development of economics learning standards in Australia, this is a time to consider teaching and learning approaches to engage students and develop skills in economics. This paper considers that to satisfactorily develop skills in economics it is important to recognise this difference in student preferences for learning styles and to apply a variety of learning styles and opportunities for students to learn and develop skills. One method for measuring learning styles is VARK. This approach considers visual (V), aural (A), reading (R) and kinesthetic (K) preferences for learning. This method determines students preferred modes of intaking, processing and outputting information. The paper examines the application of this approach at Australian Catholic University and evaluates the success this pedagogy had at increasing student satisfaction and skills in introductory level economics.

Introduction

The purpose of this study is to measure the effectiveness of using a VARK methodology on student achievement and learning outcomes in economics. This application of teaching methods that consider visual (V), aural (A), reading (R) and kinesthetic (K) preferences for learning has been used for a number of years in the economics classes at the Australian Catholic University (ACU), in Sydney, Australia. This study will evaluate the effectiveness of achieving the national learning standards in economics while catering for individual preferences for learning of the economics cohort at ACU.

It has been well documented, both in Australia and abroad (Guest, 2013; Laurenceson, 2005; Lodewijks & Stokes, 2014; Ongeri, 2009), that the the quality of teaching in the economics discipline has been constantly ranked among the lowest by undergraduate students. In 2001, Becker and Watts questioned the use of 'chalk and talk' and argued that "changing teaching methods and increasing the importance of teaching within economics departments, in response to falling enrolments, is a plausible and endogenous response for faculty members and departments" (Becker & Watts p. 446). Despite their recommendations more than a decade ago, a high number of university lecturers in economics still use traditional teaching methods. According to Laurenceson (2005) one of the underlying reasons for the absence of modern teaching methods in economics, is the relative favouring of research over teaching by universities. Laurenceson (2005) argues that research has a higher return than teaching, through tenure, promotions and pecuniary returns. Consequently, it is expected that academics will allocate more of their time to producing research than focusing on quality teaching. In 2012 this issue came to the forefront when Business Educators Australia (BEA) requested that universities implement high quality teaching in economics in order to motivate university students to consider

teaching careers. However "it was explained to the BEA, most university staff did not see quality teaching and learning outcomes as a source of reward or promotion but that universities were obsessed with high-quality research performance" (Lodewijks & Stokes, 2014 p. 78).

Therefore, while the VARK model may be valued by many educators, it is not a common teaching strategy implemented by economics lecturers. Yet the challenges facing lecturers teaching undergraduate units in economics, such as declining student numbers combined with falling entry requirements, suggest an immediate need to redress current teaching pedagogies.

The following sections of this paper will discuss the main challenges that confront economics educators. These include an overview of the VARK model, the impact of the Australian learning standards in economics on the learning and teaching approach at ACU and the measurement of the effectiveness of these teaching and learning strategies at ACU.

Background

The development of Australian learning standards in economics provides universities with an opportunity to review the skills that are required in introductory level economics units. This is supported by Guest (2013) who argues that "the development of Australian learning standards in economics would provide the impetus for a timely process of curriculum renewal" (p. 54). Guest (2013) further argues that this curriculum renewal needs to focus upon a deeper understanding of economics and graduates acquiring critical thinking skills. This is reinforced by the findings of several national (Argyrous, 2007; Guest & Duhs, 2002; Stilwell, 2006) and international studies (O'Doherty, Street & Webber, 2007; Hedges, 2008; Mearman, Papa & Webber, 2013) that show that economics graduates lack the ability to address real world contexts. In turn, this lack of real world application has been acknowledged by both the university graduates themselves and their respective employers. An Australian study by Guest and Duhs (2002) found that economics graduates were critical of their inability to apply economics in real world contexts. Meanwhile, international studies by O'Doherty, Street and Webber (2007) and Walstad and Rebeck (2002) argued that economics graduates had a weak understanding of the fundamental concepts of economics and consequently a poor ability to apply this knowledge to the real world. According to Davidson (2011) employers claim that higher education is not equipping students with the skills required in the 21st century. These skills, that employers claim graduates lack, are also referred to as 21st Century literacies and include synthesising, analysing, organising, and interpersonal and communication skills.

Although there have been many attempts to generate greater interest and enthusiasm in economics subjects, introductory economics units are often embedded with detailed elaborations of theoretical constructs (Becker & Watts, 1995). This is supported by Siegfried et al. (1991) who argue that introductory units tend to focus on the "formalism of theory at the expense of application" (p. 21). Siegfried et al. (1991) suggest that

introductory units should focus more on the application of a variety of tools to a small number of concepts rather than an extensive theoretical coverage of different topic areas. This argument is maintained by both Stilwell (2006) and Argyrous (2007) who consider that one of the main problems facing undergraduate teaching of economics in Australia is that its teaching is dominated by an uncritical presentation of neoclassical economics. Studies such as Guest and Duhs (2002) and Hedges (2008) suggest that economics students are dissatisfied with the teaching pedagogy of introductory units. For instance, introductory units are still based on the teaching of a common core of economics principles to all students irrespective of their prior economics knowledge or their personal interests and preferences. The study by Hedges (2008) found that economics is perceived by students as a 'hard' subject and is extremely overwhelming for those with no prior economics knowledge. Hedges (2008) also found that even for those students who had some prior knowledge of economics, the use of mathematical approaches to teaching was difficult to understand. However, Hedges' (2008) study concluded that the students' difficulty with learning economics was one of translation, and not of understanding, suggesting that the underlying issue is the limited application of learning strategies. Hedges (2008) suggests that the solution is to include a range of teaching styles. This can be done by delivering the same idea in several forms such as through words, graphical and mathematical explanations. This is supported by Mearman, Papa and Webber (2013, p. 5) who argue dedicated university students are "frustrated with too much mathematics and not enough relevance" and according to the Economic Network (2010) students find that economics contains excessive mathematics, to the point that teaching becomes divorced from reality and is extremely theoretical.

Argyrous (2007) argues that growing student dissatisfaction with the teaching pedagogy of economics is expressed by a greater number of students choosing not to enroll in economics units. This argument is maintained by the study conducted by Millmow (2009) which found that not only has the number of students enrolling into economics units decreased but the number of Australian university economics departments has declined from 37 in 2000 to 27 in 2009. A more recent study by Stokes and Wright (2012) found that the number of students commencing economics in Australian universities declined while the overall sector experienced considerable growth in the period 2004 to 2010. Stokes and Wright (2012) report that "business and management numbers rose 27 percent, marketing and sales 34 percent and law 30 percent. The number of commencing economics students declined, however, by two percent" (p. 2).

According to Guest (2013) student dissatisfaction with the teaching of economics is also reflected in the Graduate Careers Australia's Good Teaching score for 'economics and econometrics'. That is the teaching of 'economics and econometrics' for the five year period from 2005 to 2009 was ranked in the bottom 35 percent of all fields.

Consideration of preferred learning styles of students

One approach to improving student learning outcomes and skill development is through the application of appropriate methods of teaching and learning that address the learning styles of students. Numerous studies (Fleming, 1995; Hedges, 2008; St. Hill, 1997; Stokes

& Wilson, 2009, Stokes & Wright, 2012) demonstrate that students differ in their preferred learning styles. To satisfactorily develop skills in economics it is important to recognise this difference in student preferences for learning styles and to apply a variety of learning styles and opportunities for students to learn and develop skills. One method for measuring learning styles is VARK. VARK determines students preferred modes of intaking, processing and outputting information. This approach is called VARK because of its four modes of learning:

V   Preference for visual ways of representing information, for example video, graphic and symbolic ways
A   Preference for learning by aural methods, for example by listening and talking
R   Preference for reading and writing textual information
K   Preference for kinesthetic learning experiences and practices.

The learning styles of students differ with the individual but also differ with the disciplines that the students choose to study. Fleming (2013) reports that law students are more likely to have larger proportions of R, Read/write students and teachers than, say, nursing, where students are more likely to have K, Kinesthetic preferences. Graphic designers, performing arts and computer-systems students have a greater proportion of V, visual preferences. A study by Stokes and Wilson (2009) at the University of Wollongong of first year economics students showed that the students generally had a diverse range of preferred learning styles. Students were asked to respond to each of the thirteen questions by nominating any one or more of the above modes as appropriate for them. The average number of responses for each mode were 3.7 for V, 3.5 for A, 5.0 for R and 4.0 for K. Whilst the Read/write preference was ranked the highest, the other modes were also significant, implying that Visual, Audio and Kinesthetic are important modes of processing information by economics students.

As part of this study, economics majors were surveyed at ACU to determine their preferred learning styles. The survey showed that the students' learning preferences were multi-modal with scores of V (7.7), A (6.8), R (7.5) and K (7.3). These results reinforced the need for the economics lecturers at ACU to develop pedagogy that would cater to the individual differences and aspirations of their students.

There are also differences between males and females. Fleming (2013) states that the VARK survey results show that males have more Kinesthetic responses and females more Read/write responses. The majority of students, however, are likely to be multi-modal, i.e. they have more than one learning preference. It is even possible that they have an equal preference for all four learning styles. For this reason it is important to develop teaching strategies in economics that cater for all learning preferences and styles.

Prior learning and contextual learning

Another important consideration in improving student learning outcomes and developing skills in economics is to create relevance for the students. This can generally be achieved by considering the students' prior learning backgrounds and creating a learning

environment that is relevant to the students. The student who works at McDonalds would have some knowledge of customer service and selling products. This knowledge could be used in discussing demand and supply in an introductory microeconomics unit. Similarly a student who goes shopping would have been involved in basic consumer choice and has knowledge of how price affects the quantity of products that they will purchase.

Similarly, the Kinesthetic learning preference refers to the "perceptual preference related to the use of experience and practice (simulated or real)" (Fleming & Mills, 1992, pp. 140-141). The key is that people who prefer this mode are connected to reality, "either through concrete personal experiences, examples, practice or simulation" (Fleming & Mills, 1992, pp. 140-141). It includes demonstrations, simulations, videos and movies of 'real' things, as well as case studies, practice and applications. It is possible to combine the Kinesthetic learning preference with other preferences in R, reading and writing about real world events, V, watching videos on global events or environmental issues, and A, discussing real word events or issues. This is supported by Mearman, Papa and Webber (2013) who found that when the teaching of economics becomes excessively mathematical or too abstract it becomes unattractive to the students. They therefore argue that the teaching of economics must be grounded in real world situations.

The approach for developing skills in economics

Developing literacy skills in economics

The draft paper, *Economics learning standards for Australian higher education* states under Learning Outcome V that students "should be able to demonstrate the ability to acquire independent learning skills" (Economics Learning Standards Working Party, 2013 p. 22). This includes the ability to determine, access, critically evaluate and integrate information to accomplish a specific purpose.

Davies and Mangan (2007) argue that in order for students to fully understand the discipline 'economics' they must first master 'threshold concepts'. Based on the work of Meyer and Land (2006 pp. 7-8) 'threshold concepts' are those concepts which are "transformative, irreversible, integrative, bounded and potentially troublesome". Consequently, by definition 'threshold concepts' support the notion of 'conceptual change' rather than embrace the theory of 'enrichment tradition'. That is, the enrichment tradition assumes that a student's prior knowledge will help support the acquisition of a new concept, whereas, conceptual change suggests that the new concept is formed from reworking the student's prior understanding. According to Davies and Mangan (2007) there are three levels of conceptual change in economics: Basic, Discipline and Procedural. 'Basic' refers to transforming the student's everyday experience with ideas from economics such as learning the difference between price and cost. 'Discipline' involves transforming concepts learnt from other disciplines with ideas from economics such as markets and opportunity cost. 'Procedural' refers to the ability to form arguments in economics through ways of practising such as students learning elasticity. However, O'Donnell (2009) argues that there is no evidence to suggest that implementing the 'threshold concepts' approach is any more effective than other teaching/learning

strategies in economics. O'Donnell (2009) challenges Davies and Mangan (2007) on fundamental concepts such as 'opportunity cost' qualifying as a 'threshold concept' and whether 'threshold concepts' are relevant to the economics discipline. For instance, threshold concepts by definition assume that the concept is both the desired outcome and the actual outcome. However, in the discipline of economics, there are many situations where the targeted concepts are not present in reality.

According to Salemi (2005) students obtain economic literacy when they are able to apply basic economic concepts in diverse real world contexts outside the classroom. However, in order to achieve this, economics makes considerable use of specialised language, terminology and concepts that differ from the general interpretation of those words in society (Gale, 2003). For this reason it is important to teach the students the skills to comprehend the meaning of economic terminology in the general application of words in a variety of sources including print, online and other media. Everyday words such as rent, capital and investment have different meanings in economics. It is important to demonstrate these differences in a contextual environment so that students can see the real world application of economic terminology. One example of how that can be achieved is by choosing a contemporary economic issue such as an environmental problem or a global economic event in an article or other form of media and ask the students to find examples of economics terms in that source. Activity 1 provides some examples of the types of concepts that can be found in many articles. This activity introduces a number of 'threshold concepts' including opportunity cost, scarcity, external cost and the profit motive.

Activity 1: Economic terms
What examples are there in the article of the economic concepts of
- Scarcity
- Needs
- Opportunity cost
- External cost
- Government
- Trade
- Profit motive
- Markets
- Factors of production
- The global economy

The students would have to have some knowledge of the meaning of the economic terms and concepts before they could relate that concept to the real world examples. The exercise would measure the students' skills at applying their economic understanding in the real world.

Developing numeracy skills in economics

The draft paper, *Economics learning standards for Australian higher education*, states that "economic analysis requires the use of numbers, mathematical concepts and methods, logical thinking, and reasoning in order to evaluate issues and solve problems"

(Economics Learning Standards Working Party, 2013 p. 18). The Economics Learning Standards Working Party (2013) argue that economists regularly present information in a numerical form, therefore it is imperative that students learn a range of numeracy skills such as statistical analysis, graphical interpretation and application of models.

A study by the Australian Council for Educational Research found that effective teachers:

- have high expectations of all students and set challenging tasks and goals appropriate for each student
- integrate their content knowledge and their teaching skills to make connections that engage student interest and maintain involvement
- monitor student progress using their knowledge of each student's current achievement and the next steps appropriate for them, and provide feedback to the student
- enjoy mathematics and take pleasure in students' enjoyment and success (Thomson et al., 2005).

The teaching of numeracy skills in introductory units of economics at university is becoming more challenging as a higher proportion of students are not completing Year 12 mathematics. This is supported by a recent study by Mack and Walsh (2013) who found that in 2001 5.4 percent of all ATAR-eligible students had completed no study of mathematics in their HSC. In 2011 this had increased to 16 percent, with two-thirds being female. Moreover, Mack and Walsh (2013) state "21.5 percent of the ATAR-eligible females completing their 2011 NSW HSC did not include any mathematics course in their HSC subjects, against a figure of 7.5 percent in 2001" (p. 9).

In order to meet these challenges, introductory units in economics at ACU support Goos, Geiger and Dole's (2012) model for numeracy, an invaluable exemplar for designing and implementing numeracy rich tasks. Although designed for students in secondary education the principles can be adapted for teaching undergraduate students in economics. This model encourages the application of mathematical knowledge, use of representational, digital and physical tools, incorporation of real life contexts and positive dispositions to mathematics. In addition to these features of the model, Goos, Geiger and Dole (2012) argue that it is also imperative that numeracy tasks encourage a critical orientation in students. Therefore, in order to design and implement numeracy rich tasks in economics at ACU, the pedagogical approach of scaffolding within a framework where learning approaches encourage students to construct their own knowledge is implemented. This approach is supported by Diezmann, Watters and English (2001) who claim that educators need to adopt investigative pedagogies whereby students can speculate, test their ideas and argue with fellow students to defend their answers.

The key to teaching numeracy skills in economics is creating relevance for the students to learn and apply these skills. Students will have different levels of prior knowledge and skill levels in numeracy. For this reason it is important that activities are structured so that they allow students to work at their own pace. Activity 2 provides an example of students learning and applying numeracy skills in microeconomics.

Activity 2: Create your own business

Assume that you are going to start up a business to earn extra income selling a new product (good or service) to your fellow students. N.B. *The tutor may like to do this as a group work activity where a small group of students decide on a product.*

Firstly consider the factors that would influence the demand for particular products and select a product that you think might be successful. A business needs to know the quantity of a product that will be purchased by consumers at various price levels. One way a firm will initially try to measure this is by market research or a survey. Survey 10 - 20 of your fellow students as to whether they would buy this product and the quantity that they would buy at various price levels. Write these results in the demand schedule below.

Price (per item)	Quantity demanded

When you have completed your schedule, plot your results on a demand curve and answer the questions below. Remember to have a scale on each axis.

Price

Quantity

1. What do you notice about the shape of the demand curve?
2. How do changes in the price affect the quantity demanded?
3. Suggest 5 factors that could lead to an increase in demand for your product?
4. Plot a new hypothetical demand curve on your diagram, showing the effect of an increase in demand. What has happened to the quantity demanded at each price level?

It is important to have students involved in all stages of the activity. A student should draw the demand curve graph on a board. Other students could be asked to give the student a score out of 10 for the activity. If students find errors in the answer provided, challenge them to discuss the errors and how to correct the errors on the graph. It is important to praise the students for their achievements. In time the students will become more aware of what is required for correctly drawing a graph in economics. They will aim to get the perfect 10 score as they draw the graphs. This is one advantage of teaching numeracy in economics - students can receive almost instant feedback and they can develop their skills to achieve a perfect 10, which is an intrinsic reward. The goal for the students should always be the perfect score but it is important to encourage the other students, who are improving their skills, but have not achieved the perfect 10.

Activity 3: Measuring Australia's balance of payments
Consider the following data for the Australian economy. All amounts are in billions of dollars.

	2012/13	2013/14
Goods credits	249	274
Goods debits	-248	-267
Service credits	51	57
Service debits	-63	-71
Net capital flows	-1	0
Primary income	-38	-39
Secondary income	-2	-2

1. Into which categories would you put the following transactions:

    a) Indian students coming to Australia to study?
    b) Australia consumers buy BMW cars from Germany?
    c) A large Australian firm borrows money from overseas?
    d) An Australian resident sends money to a relative in Italy?
    e) Justin Bieber has his royalties from music sales in Australia paid to him in Canada?
    f) Ford returns profits from its Australian car manufacturing business to the USA?
    g) Australians sending donations to people devastated by an earthquake in Asia?
    h) An Australian mining company sells iron ore to China?
    i) A migrant from Britain settles in Australia and brings in their financial assets?
    j) A Japanese tourist flies to Australia on Jetstar?

2. What is the balance of goods and services for Australia in 2012-13 and 2013-14?
3. What is the approximate current account balance for Australia in 2012-13 and 2013-14?
4. Allowing for some rounding errors, what would be the overall balance of payments result in Australia in 2012-13 and 2013-14?
5. What is the balance of the financial account in Australia in 2012-13 and 2013-14?
6. What could be included in this category?
7. What are the main changes that have occurred in the balance of payment accounts for Australia between 2012-13 and 2013-14?
8. What are some possible implications of these changes for the economy?

Another activity that can integrate numeracy skills with real world application and content relates to Activity 3 on Australia's balance of payments. The activity considers the classifications in the balance of payments as well as using the current data in measuring the components of Australia's balance of payments. A good initial approach for teaching this skill, especially for the Visual learners, is to set out a flow chart of the balance of payments as shown in Figure 1.

Another important skill in economics is graphical interpretation. The Reserve Bank of Australia and the Australian Bureau of Statistics (ABS) provide many useful and relevant graphs for interpreting and analysing trends in the Australian economy. In addition, the International Monetary Fund and the World Bank provide statistics and graphs on the global economy. Activity 4 is based on interpreting a graph from the Reserve Bank Chart Pack on unemployment rates and the participation rate. The activity also provides some data for calculating hypothetical unemployment and participation rates.
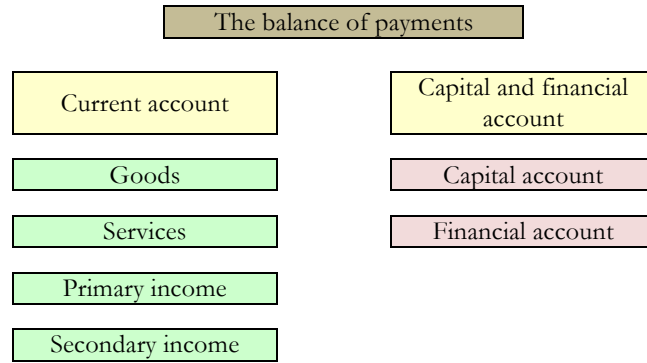
Figure 1: Australia's balance of payments

Activity 4: Australia's unemployment and participation rates

1. How is the level of unemployment measured by the ABS?
2. What was the level of unemployment in 1993?
3. What has been the trend in unemployment from 1995 to 2013? Can you suggest a reason for this?
4. How and why did this pattern change in 2008?
5. What does the 'participation rate' measure?
6. What was the level of the participation rate in 2013? What trend has been occurring in the participation rate in the period 2003-2013?
7. What impact does the participation rate have on the level of unemployment and vice versa?

Consider the following table and answer the questions below. All figures are in millions.

	Year 1	Year 2
Unemployed	10	11
Employed	90	95
Working age population	150	155

8. What are the unemployment rates in years 1 and 2?
9. What are the participation rates in years 1 and 2?

Developing information and communication technology (ICT) skills

According to the Economics Learning Standards Working Party (2013) in order for students to be competent in 'quantification and design', students need to create, analyse and communicate their information through Information and Communication Technology (ICT). Furthermore, students need to be able to communicate and present their information using both computer projection technology and the internet to both specialist and non-specialist audiences.

ICT skills allow students to find information that will be useful to them in their university studies as well as their future careers. Once the information is found it is important for the students to be able to interpret this information. Activity 5 shows how ICT skills can be developed by introducing economics students to the statistical data sources available on the ABS website.

Activity 5: Using the Internet to keep up to date with economic statistics from the ABS
Use the Australian Bureau of Statistics website on the Internet to answer the following questions:
1. What are the current levels of the following economic indicators in the Australian economy? Remember these should be expressed in annual terms.
   • Inflation rate
   • Unemployment rate
   • Economic Growth rate
   • The size of the Current Account Deficit
   • The level of the Net Foreign Debt
2. How many major categories are there in the CPI? List them.
3. Which categories have contributed most to inflation in the last 12 months? What caused this?
4. Has there been deflation in any areas in the last quarter? Why did this occur?

Developing critical and creative thinking skills

According to the draft paper, *Economics learning standards for Australian higher education*, graduates of a Bachelor Degree will have "cognitive and creative skills to exercise critical thinking and judgement in identifying and solving problems with intellectual independence" (Economics Learning Standards Working Party, 2013 p. 13).

The best way to develop these skills in economics is to integrate the development of the skills throughout the course. As the student progresses through the course not only are the skills developed more deeply but they are also linked to the content that the students are studying. In Activity 2 question 4, the students were required to develop a hypothetical demand curve and to analyse what has happened to demand. In Activity 3, questions 7 and 8, the students are required to interpret the Balance of Payments data for Australia and analyse the trends and draw conclusions of the possible implications of the trends for the Australian economy. The economics course at ACU uses a scaffolding approach to develop basic skills in Year 1 and builds on these in the following years so that students can produce high quality, independent, analytical research in their final year of study.

As students have different learning preferences, there are other creative and critical learning skills that can be developed in economics through the use of other visual means such as cartoons. Activity 6 provides one example of a contextual learning application that caters for the visual and more creative learners but also provides scope for discussion for the aural learners.

Activity 6: Using cartoons in economics
Refer to the following cartoon. What economic issues is the cartoon expressing? Do you consider that the views of the cartoonist are correct?

Cartoon by Nicholson from *The Australian* newspaper: www.nicholsoncartoons.com.au

Group work can also be a good way to develop oral communication skills, team work, critical and creative skills, amongst others. One ice breaker to introduce students to economics in university is the activity 'stranded on a deserted island' (Activity 7). This allows the students to get to know each other and to think creatively and work together to find solutions to the basic economic problems. It is also a great tool for motivating students and creating an interest in economic problems and issues.

Activity 7: Group work: Stranded on a deserted island
You are to break into groups of 4-5. You are to assume that you are stranded on a deserted tropical island, 500 km off the coast of Queensland. You have the task of setting up an economic system on that island. You need to decide the basic economic questions of:

- What and how much to produce?
- How to produce it?
- Who will get it?
- What will be done to increase efficiency and economic growth?

It is important to develop a system that will sustain economic development. The role of each person in the group should be clearly explained. The group will have 20 minutes to plan their economic system and each group will give a 3-5 minute report.

The methodology and evaluation of this learning and teaching approach

This study has outlined the teaching and learning pedagogy that has been applied at ACU in the economics discipline in order to address the Australian learning standards in economics through the application of VARK. This section will measure the effectiveness of using this approach in catering for individual preferences of learning in economics at ACU. In turn, this would establish a cause-and-effect relationship between the teaching and learning approach implemented at ACU and the learning outcomes achieved by its students. In order to measure the success this pedagogy has on the level of student satisfaction, level of generic skills and achievement of national learning standards in economics, a qualitative and quantitative approach is taken. The VARK model was used to both diagnose the learning styles of the students in the ACU classroom as well as underpin the teaching and learning strategies implemented in each economics unit.

Methodology

This study will apply both qualitative and quantitative methodologies to measure the effectiveness of the approach. The study instruments used to form the analysis of results included an internal evaluation of teaching, known as the Student Evaluation of Teaching (SET) together with an external evaluation of teaching named the Course Experience Questionnaire (CEQ). Student Evaluation of Teaching (SET) involves anonymous on-line surveys of students in individual units that ask them to rank aspects of their learning experience and teacher quality as well as providing an overall score out of 5 on a Likert scale on the overall quality of teaching. The introductory level units that were surveyed in this study were ECON102 Microeconomics 1 and ECON103 Macroeconomics 1 in 2013. The surveys also allow for qualitative responses from the students in regards to aspects of teaching and learning that they experienced in the units. The Course Experience Questionnaire (CEQ) is an externally managed survey of students approximately 4 months after they have completed their university degree. The Course Experience Questionnaire (CEQ) surveys will be used to evaluate ACU's teaching and learning approach both in terms of student satisfaction with the teaching and the development of generic skills in the economics program. The achievements that the Australian government consider desirable

in terms of student satisfaction of teaching and generic skill development are measured through Course Experience Questionnaire (CEQ) data. The Australian government provides the CEQ data for all its universities on the 'my universities website'. The data from that website is used to evaluate the success of the teaching and learning approach at ACU compared to the other universities teaching economics in the state of New South Wales.

Background information on the student sample

This learning and teaching approach has been used for a number of years in the economics classes at the Australian Catholic University (ACU), in Sydney, Australia. The economics major at ACU is designed to cater for a wide range of students with different abilities and aiming to pursue different careers. The Australian Tertiary Admission Ranks[1] (ATAR) for economics students at ACU have ranged from less than 40 to 99. Students studying economics at ACU do so through a variety of different degrees. These include: Bachelor of Arts, Bachelor of Arts and Economics, Bachelor of Arts (Psychology), Bachelor of Arts/Bachelor of Business or Commerce, Bachelor of Arts/Bachelor of Teaching, Bachelor of Arts/Bachelor of Social Work and Bachelor of Arts/Bachelor of Global Studies. Thirty percent of these students have studied no year 12 Mathematics and 75 percent have no prior knowledge of economics. A study of ACU students completing a major in economics showed that the students' learning preferences were multi-modal with scores of V (7.7), A (6.8), R (7.5) and K (7.3). These diverse factors are important in realising the need to cater for individual differences and aspirations and the challenge of catering for such a diverse student body.

The results

This section discusses the results from the Student Evaluation of Teaching (SET) surveys for ECON102 Microeconomics 1 and ECON103 Macroeconomics 1 in 2013 and the average Course Experience Questionnaire (CEQ) data for 2010 and 2011.

Table 1: SET Results 2013 (Scale 1-5 with 5 being 'strongly agree')

Question	1. Demon-strates quality teaching	2. Is enthus-iastic about the subject	3. Explains clearly key ideas or concepts	4. Makes the subject interesting	5. Responds to student needs and concerns
1st Semester ECON102	4.88	4.93	4.80	4.93	4.72
2nd Semester ECON103	4.94	4.94	4.94	4.94	4.88

The SET surveys for ECON102 Microeconomics 1 and ECON103 Macroeconomics 1 are displayed in Table 1. The Table demonstrates the student responses to the five questions listed in the column headings on a Likert scale with 5 being 'strongly agree'. These areas are considered by ACU to be primarily important in measuring the quality of the learning and teaching experience in the University. Not only are the student responses

to the surveys very positive but the scores improve from first semester to second semester.

The qualitative responses from the introductory level economics students through the Student Evaluation of Teaching (SET) surveys provided additional supportive feedback on the learning and teaching outcomes of the economics units at ACU. Some examples of the common feedback provided by the students were that the lecturers:

> teach in a way that's relevant, interesting, modern, engaging, and easy to understand …
>
> use a variety of teaching strategies that keep a student interested during a lecture …
>
> provide weekly activities which give me a better understanding and provides examples which cater to different learning types …
>
> put effort in to communicate information in different ways to suit varying learning styles …
>
> use real world examples that I can relate to …

The Course Experience Questionnaire (CEQ) data from the *MyUniversity's* website is reported in Table 2. Table 2 provides the average score achieved by ACU for economics in 2010 and 2011 compared to the average score for the nine universities with economics majors in New South Wales. In each of the years ACU was ranked first in the state for teaching quality and generic skills.

Table 2: Course experience questionnaire data for universities in New South Wales (2010-2011 averages)

University	Teaching quality	Ranking for teaching quality	Generic skills	Ranking for generic skills
Australian Catholic University	90	1	97	1
Average for NSW universities	64		84	
Range of scores	46-90		68-97	

Source: Data derived from *MyUniversity* (2012, 2013).

Conclusion

Students learn more effectively if they are interested in the subject matter that they are studying. One major advantage of teaching economics at university in Australia is the contemporary nature of the course. It is important to relate the learning process to the prior learning and experiences of the students and to teach economics in a real world context.

This paper has explored the different learning preferences of students based on the VARK model and it has shown that it is important to consider these preferences in developing teaching and learning approaches. The draft paper, Economics Learning Standards for Australian Higher Education, sets out the skills that students will be expected to develop in their studies. To most successfully develop these skills, it is important to develop activities that promote interest and relevance for the students and

allows for students to progress at their own pace. These activities need to be both challenging and rewarding; rewarding in an intrinsic sense, in that the students gain satisfaction from the achievement of grasping and developing these skills. The evidence at Australian Catholic University suggests that the application of a teaching and learning approach that caters for different learning styles with an emphasis on contextual learning has been well received by students and enhances the students' experiences and achievements.

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Endnote

[1] The ATAR is the entry score required for university entry in Australia. It ranks student performance from 30.00 to 99.95.

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