Developing deep understanding in undergraduate programs through the application of knowledge – Dr Lisl Fenwick

Introduction

- Research conducted with support of an ACU Teaching Development Grant
- Involved 3 campuses of ACU
  - Dr Lisl Fenwick- Ballarat
  - Dr Michele Endicott- Brisbane
  - Drs Sally Humphrey and Marie Quinn - Strathfield

  This presentation reports on one part of the project conducted in Ballarat.

Background to the research

- Deep knowledge is valued in undergraduate programs for the professions (Ramsden, 2003; Biggs & Tang, 2007)

- Knowledge, when deeply understood, can be transferred and applied in new contexts and manipulated to solve problems in innovative ways (Garraway et al., 2011; Peach, 2010; Boulton-Lewis, 1998; McKay & Kember, 1997; Ramsden, 2003; Biggs & Tang, 2007; Schwandt, 2005)

- Deep knowledge is especially valued in teacher education
    - Graduates of teacher education programs, who can make a difference to students' outcomes in schools, have deep conceptual understanding that can be applied flexibly in a diverse range of contexts (Darling-Hammond, 2006; Loughran, 2006; Zeichner, 2008; Milner, 2005; Poplin & Rivera, 2005)

Background to the research

- Deep knowledge about language a current emphasis in teacher education
    - In Australia, and other developed countries, the tendency of schooling to reproduce inequality is being highlighted by governments.
    - Governments are linking future prosperity within knowledge economies to better outcomes for students who do not traditionally succeed in schooling (MCEETYA, 2008; CERI, 2006; OECD, 2010).
    - Governments focused on improving students' literacy and numeracy skills (OECD, 2010)
    - Research within the sociology of education since the 1970s has emphasised that students from low SES and ethnic minority backgrounds tend not to have the linguistic capital valued in schooling (e.g. Bourdieu & Passeron, 1990; Teese & Polesel, 2003; Lingard, Mills & Hayes, 2000).

Background to the research

- LICs in ACU involved in a first-year unit *Linguistics for Literacy* observed that students did not transfer their language learning well (e.g. into a second-year unit on lesson planning)

- LICs concerned that the knowledge about language developed in first year was not deep enough for transference and application in other contexts

- How develop deep understanding that enables transference?

- Research from the professions suggests that deep understanding is only attained when curriculum, assessment and teaching approaches are designed with this aim in mind (Ramsden, 2003; Biggs & Tang, 2007; Boulton-Lewis, 1998; McKay & Kember, 1997; Saltmarsh & Saltmarsh, 2008; James, Hughes & Cappa, 2010)

- Tasks used in classes and assessment must take students beyond the superficial learning of facts and processes (Boulton-Lewis, 1998; Ramsden, 2003; Biggs & Tang, 2007)

Background to the research

- Tasks must emphasise application of knowledge (McKay & Kember, 1997; Biggs & Tang, 2007; Ramsden, 2003)
- Research within teacher education supports the emphasis on application
  - Application of knowledge conceptualised as using theory in practice, usually during field placement experiences (Darling Hammond, 2000; Darling Hammond, 2006; McKay & Kember, 1997; Maxwell, 2012)
  - However, some units are not linked immediately to field experience (such as the first-year unit on linguistics)
  - Literature from the general field of tertiary education suggests that application of knowledge, with the aim of developing understanding, does not necessarily need to involve immediate use within professional practice – tasks requiring application of knowledge, within the context of a specific content area, can be used constantly (Boulton-Lewis, 1998; Ramsden, 2003; Biggs & Tang, 2007).

Methodology

- This part of the research included one case study of pre-service teachers undertaking the first-year *Linguistics for Literacy* unit on the Ballarat campus
- Within the unit, pre-service teachers learn about traditional and functional grammar (Systemic Functional Linguistics based on work of Michael Halliday 2009, 1999) – focus of this research on functional grammar
- Curriculum, teaching practices and assessment strategies designed to develop deep understanding by constantly moving between the transmission and application of knowledge about language
  - Information about language provided through weekly readings and lectures
  - Short tasks, asking the pre-service teachers to work with the people next to them to apply knowledge to create analyses of short texts, interspersed throughout lectures
  - Tasks in tutorials always involved application of knowledge about language

Methodology

- Example of tasks:

- Meaning can be packed into the nominal group.
- The nature of nominal groups will change depending on the kind of text and its purpose.
- E.g. The old man walked towards the front door.
- Can you identify a nominal group in the above example? What kind of text could the example be related to?

Methodology

- Example of tasks:

- Compare the previous example with this one:
- The long and extensive procedure for dealing with rapid escalating bushfire scenarios is becoming increasingly important.

- Identify a nominal group.
- How is it different from the one identified previously? Why is it different?

Methodology

- Assessment also required application of knowledge
  - Major section of the final closed-book examination presented a previously unseen written text and pre-service teachers completed an analysis of the text using knowledge of functional grammar

  Data Collection

  -questionnaires completed by the pre-service teachers at the end of the 12-week unit gave perceptions of the teaching and learning strategies used in the 12-week semester

  -analysis of the extended written response in the examination (analysis of a text using knowledge of functional grammar)

  -analysis of extended written response in the examination undertaken for this cohort and cohort from the previous year

Methodology

- Main form of data- analysis of extended written response in the examination
- Framework for analysis based on the work of Biggs and Tang (2007) and Ramsden (2003)
  - Describe evidence of deep or surface knowledge
  - E.g. students present deep knowledge if they can make links between parts and levels of a system
  - E.g. students present surface knowledge if they identify and label parts
  - Criteria for deep knowledge listed
  - Criteria for surface knowledge listed
  - Applied within context of an extended response using functional grammar
  - Criteria for deep and surface levels of knowledge about language generated
  - Criteria used to analyse students' extended responses

Methodology

- Example of criteria for analysis
- Deep knowledge

| Link between parts and levels of a system | Identify the type of text through the language being used
Explain how specific language features are used to achieve different kinds of meanings within a text
Explain that the specific language choices used to achieve ideational, interpersonal and textual meanings within a text are affected by context |
|---|---|

Results

- 53 pre-service teachers volunteered to be involved
- Results from the questionnaires
  - 62% said they did not feel confident about their knowledge about language at the beginning of the unit; 38% felt some confidence; 0% felt a high degree of confidence
  - 24% felt very confident by the end of the unit, 74% felt some confidence and 2% did not feel confident

Results

– Perceptions of teaching and assessment strategies

Teaching and assessment strategies	% of pre-service teachers (N=53)			
	Strongly agree	Agree	Disagree	Strongly disagree
Lectures assisted me to develop my knowledge of language.	32	68	0	0
Tutorials assisted me to develop my knowledge of language.	51	43	6	0
Working on tasks to analyse and interpret texts assisted me to develop my knowledge of language.	36	62	2	0
Working with peers assisted me to develop my knowledge of language.	45	51	2	2
Preparing for the final examination assisted me to develop my knowledge of language.	58	38	4	o

Results

- Results of analyses of extended examination response

	Study group (N=53)	Control group (previous year) (N=56)
Demonstrated some deep knowledge about language	79%	54%
Demonstrated surface levels of knowledge about language	21%	46%

Results

- Results of analysis of extended examination response (examples)

	Students in study group demonstrating some elements of deep knowledge (N=42)	Students in control group demonstrating some elements of deep knowledge (N=30)
Use identified examples to support accurate conclusions about language use in the text	95% (N=40)	77% (N=23)
Identify patterns in language use to discuss how the patterns helped to achieve meaning in the specific context	33% (N=10)	20% (N=6)
Make informed generalisations about the text	52% (N=22)	30% (N=9)
Use detailed analyses of the text to hypothesise about the author and their context	33% (N=14)	0% (N=0)
Link specific language features with the 3 ways of making meaning in functional grammar	48% (N=20)	20% (N=6)

Results

- Results of analysis of extended examination response (examples)

	Students in study group demonstrating elements of surface knowledge (N=11)	Students in control group demonstrating elements of surface knowledge (N=26)
Use knowledge of language features to identify and label parts of a text	91% (N=10)	92% (N=24)
Provide some definitions of language features	56% (N=6)	58% (N=15)
Present rote learnt responses at times with little connection to the provided text	82% (N=11)	69% (N=26)

Discussion

- Pre-service teachers valued pedagogies that moved constantly between the transmission and application of knowledge (lectures, tutorials, assessment tasks, working with peers)

- Curriculum design, teaching strategies and assessment practices supported the pre-service teachers to develop deep understanding about language

- 25% more students in the study group, compared with the group from the previous year, demonstrated some deep understanding in the extended examination response

- More students in the study group could identify patterns, generalise, hypothesise and move confidently between levels of a theory

Discussion

- Few students could move readily through all levels of the language theory when applying their knowledge of language
  - Implication for curriculum design –
    - Introduction of theory with interconnected levels first and then move into the detail for each level
    - Need to make connections with different levels of the theory all the way through the unit

Discussion

- Some students did not move beyond surface levels of understanding
  - However knowledge associated with surface levels still important (e.g. identify language features in a text)
  - Students who can demonstrate deep understanding have mastered surface levels of knowledge (Webb, 1997; Marton et al., 1993 cited in Webb, 1997)
  - More time and practice needed
  - Need to embed knowledge about language in other units of the degree

Limitations

- 1st year students' perceptions of pedagogies used in the unit – may differ for students further along in their studies

- Questionnaire conducted at the end of the unit – pre-service teachers asked to reflect on levels of confidence at beginning of semester – experiences in the unit may have affected these responses

Related publication

- Fenwick, L., Humphrey, S., Quinn, M. & Endicott, M. (2014). Developing deep understanding about language in undergraduate pre-service teacher programs through the application of knowledge. *Australian Journal of Teacher Education*, 39(1), 1-38.

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