

Deep or Surface? The learning approaches of enabling students in an Australian public university

Anibeth Desierto, Carmela De Maio, John O'Rourke and Sue Sharp
Edith Cowan University.

This paper explores the use of surface and deep learning strategies of students in an enabling program at a West Australian public university—an area of research which has not fully been investigated. Drawing on social constructivism, the study investigates whether students adopt a predominantly surface or deep learning approach to their studies for their pre-undergraduate unit which forms part of an enabling or pathway program at Edith Cowan University known as UniPrep. An online survey was administered to all students (both online and on campus) who were studying this Unit in Semester 1, 2017 and 162 students completed the survey. Their responses were analysed using descriptive statistics. Initial findings suggest that enabling students appear to adopt deep learning strategies in their studies at university and that this approach to learning is used regardless of the discipline in which they are enrolled.

Introduction

Research suggests that students starting university tend to adopt a surface level approach to learning, with some studies of first year undergraduate students showing that learning is superficial and highly dependent on the task at hand (Donnison & Penn-Edwards, 2012). While we are beginning to appreciate the learning approaches adopted by such students, fewer studies have explored how students on enabling or pathway programs approach the tasks in their course of study.

Enabling programs have existed in the higher education (HE) sector for several decades and are designed for students who do not meet the minimum requirements to enter first year undergraduate studies via the traditional school pathway. These programs are currently funded by the Australian Federal Government and exist in 27 universities throughout Australia (Enabling Retention: Improving student retention in university-based enabling programs, 2018). Evidence suggests that for many students in enabling programs ('enabling students'), the course content (generally focussed on developing university-ready skills) effectively creates pathways into higher education (Hodges, Bedford, Hartley, Klinger, Murray, O'Rourke & Schofield, 2017). Further, once these students gain access to their desired courses they are relatively successful in graduating (Enabling Retention: Improving student retention in university-based enabling programs, 2018). What is not clear in the research is how enabling students engage in their learning and what strategies they adopt to succeed. This paper attempts to fill this gap in the literature and the findings from this study may help educators develop strategies that improve both the retention and engagement of students at university.

Literature review: How students in higher education learn

Many studies have examined how undergraduate students approach their academic work in higher education (Brown, White, Wakeling & Naiker, 2015; Donnison & Penn-Edwards, 2012; Burton, Taylor, Dowling & Lawrence, 2009; Biggs & Tang, 2007). Marton and Saljo (1976)

found that students, when required to complete the task of reading an academic article, adopted different learning approaches termed 'surface learning' and 'deep learning' by the researchers. With the surface approach to learning, students use strategies such as memorisation to finish their academic tasks, pass their studies and are thus "focused on reproducing" knowledge (University of Oxford, 2017, p.4).

With the deep learning approach, students are "focused on understanding" (University of Oxford, 2017, p.4) and tend to engage in the more involved cognitive functions of analysis, evaluation and synthesis for in-depth acquisition of knowledge, thus enabling "higher quality learning outcomes" (Marton & Saljo, 1976, p.4). Where deep learning strategies are adopted, there is transformation of knowledge and the student aims to comprehend content for their own development and interest; engages intensely with provided information and materials as well as relates what they are learning to prior "knowledge and experience" (University of Oxford, 2017, p.2).

In discussing these approaches, researchers have argued that surface learning strategies are necessary for moving on to acquiring deeper knowledge (Ryan & Louie, 2007) for certain fields of study and in specific contexts (Hattie & Donoghue, 2016), for developing deep learning capabilities (Hattie & Donoghue, 2016; Ryan & Louie, 2007). For example, surface learning strategies, such as rote learning, are necessary for law students who must remember-genuine elements of legal cases and court critical rulings to create compelling legal argumentation for use in a courtroom (Yin & Desierto, 2016). Surface strategies can also be used to develop and deepen understanding and can lead to more in-depth learning in languages, mathematics and the sciences (Ryan & Louie, 2007; Chan, 2004).

As well as moving from surface to deep learning strategies, students can alternate between both learning approaches depending on their academic tasks or when struggling with their workloads (Wang, 2013). For example, the study by Brown and his colleagues found that the surface approach was predominantly used by 143 undergraduates of first-year chemistry when this subject was not their main interest (Brown, White, Wakeling & Naiker, 2015). Conversely, another study found that accounting students benefit from a deep learning approach for problem-solving questions in their courses (Dohlmans, Loyens, Marcq & Gijbels, 2016). In addition, all students are able to use both surface and deep approaches as coping strategies in learning (Kember & Gow, 1989).

A deep learning approach may also be adopted by university students when they find themselves in an active, learner-focused environment (Laird, Shoup & Kuh, 2005). In addition, Wang (2013) suggests that "good teaching", "clear goals and standards", suitable "assessments", encouragement towards autonomous "learning" and quality feedback make it conducive for students to adopt deep learning strategies (Wang, 2013, pp. 33-34).

When large numbers of first year undergraduates use surface approaches (Donnison and Penn Edwards, 2012) regardless of their fields of study, it is generally symptomatic of previous school cultures wherein students have been encouraged to unquestionably accept textbook content and teacher knowledge (Wingate, 2007). It has been observed that this is truer for those fresh out of school than for mature age students (Burton, Taylor, Dowling & Lawrence, 2009, p.72) and that final year students in all areas of study tend to frequently adopt deep-learning approaches (Laird, Shoup & Kuh, 2005).

Despite these studies of undergraduate students, and more recent ones on enabling students (Relf, O'Rourke, Crawford, Sharp, Hodges, Shah and Barnes, 2017; Sharp, O'Rourke, Lane &

Hayes, 2014), there does not as yet appear to be any research specifically focussed on whether students in enabling and pathway programs in Australian higher education institutions predominantly adopt a surface or a deep approach to learning. More research into the approaches used by enabling students would be useful to further help educators design effective programs and it is hoped that the study outlined in this paper makes some contribution in this area.

Theoretical framework and methodology

The theoretical framework adopted in this study is one of social constructivism as enunciated in the works of Vygotsky (1987). This framework was used as it focusses on the innate and cognitive processes of the learner as one of the critical aspects of learning. In addition, in social constructivism, a number of factors are considered important for effective teaching and learning. These include a learner-centred classroom (Kember & Gow, 1989); interaction, collaboration and play (Vygotsky, 1987); scaffolding, constructive feedback, building on students' prior knowledge (Hermida, 2015) and a recognition by educators of the 'socio-cultural approach to learning and development' in designing programs (Vialle, Lysaght & Verenikina, 2005, p.48). These constructivist factors also help encourage deep learning amongst students (Hermida, 2015; Lamon, 2018; Blake & Pope, 2008).

For educators to understand the learner, they need to consider the latter's innate cognitive processes of learning, the experience and background that they bring to the learning process, the quality of the teaching process they undergo as well as the larger educational and social environment within which the learning takes place (Vialle, Lysaght & Verenikina, 2005).

Development in an appreciation of how these students approach learning in an enabling program is critical so that educators can better manage and design their enabling programs and equip them more effectively for their undergraduate years, addressing any deep learning strategies that students might lack in. Such findings may allow enabling educators to influence their students to adopt learning strategies to help them progress, critically regard and discover the world around them and to become effective learners (Vygotsky, cited in Liu & Matthews, 2005).

In addition, drawing from Vygotsky's (1987) constructivist framework of what constitutes the critical aspects of learning, the researchers of this study analyse their results against previous research on enabling programs (Relf et al, 2017; Sharp et al, 2014). These studies investigated the quality of the teaching process in enabling programs as well as the larger social and educational environment of these programs at three Australian universities (Relf et al, 2017; Sharp et al, 2014) including Edith Cowan University (ECU).

In conducting this analysis, the researchers have endeavoured to obtain a clear picture of those critical aspects of learning necessary for understanding the learner in an enabling program which can then help both designers and educators develop effective materials that encourage learning approaches that maximise the learning, engagement and retention of enabling students at university.

Additionally, through an investigation of the enabling students' cognitive processes as to their use of surface and deep learning strategies in their learning, the authors endeavour to contribute to the research on learning and teaching by focusing on an area not yet covered in the literature.

The research method used for gathering the information on pathway students' learning approaches was quantitative and descriptive statistics were used for data analysis as the results from the research were primarily quantitative in nature.

The participants of this study were students enrolled in the Learning Skills unit in Uniprep, ECU's enabling program, in Semester 1, 2017. The total number of students in this unit at the time was just over 1,000 and with 162 respondents to the survey, the response rate was almost 20%.

The three research questions (RQ) posed to investigate whether enabling students adopt a surface or deep learning approach in their studies were:

RQ1. Do enabling students tend to predominantly adopt more surface level strategies than deep learning strategies?

RQ2. What kind of learning strategies do enabling students tend to utilise?

RQ3. Does the discipline which enabling students wish to study at university influence their adoption of deep learning strategies?

To answer these research questions, a survey instrument, containing 10 questions, was administered to all enabling students taking the Learning Skills unit. Questions 1-8 of the survey asked for demographic information. Questions 9 and 10 both contained ten statements relating to surface learning approaches and deep learning approaches respectively and students were asked to respond to each of these based on a Likert-scale on how they learn (e.g. Strongly Agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree). For example, *'I accept information that I read as true and correct'* was a statement found in question 9 as an example of a surface learning approach, while *'I tend to question what I read'* was a statement found in question 10 and, if answered in the affirmative, is an example of a deep learning approach.

The statements for Question 9 represented strategies for a surface learning approach and the Question 10 statements related to a deep learning approach. These statements were derived from existing literature which identified certain strategies as examples of surface and deep learning approaches to learning (Entwistle & Peterson, 2004; Martin & Saljo, 1976). To ensure the validity and reliability of the survey instrument, students were not told that the statements in each question related to any particular learning approach. Despite this, one of the limitations of the survey instrument is that it has yet to be tested in other contexts and on enabling students in other institutions of higher learning.

The survey instrument was administered online to all students in the Learning Skills unit, studying both face-to-face and online. The survey opened in the final weeks of classes (by which time the students had been studying for just over three months) and remained open for two weeks after classes had concluded, to enable those students who were not able to complete the survey during class-time, to do so later. At all times, collection of data remained confidential and all student responses were de-identified.

Findings

Analysis of the demographic results showed that the respondents were a fairly homogenous group- young school leavers. Most students were females (57%), aged below 19 years (69%) and had studied in high school before commencing their enabling program at university (66%). The highest education level obtained by most was Year 12 or equivalent (73%) and most were studying on campus rather than online (85%). All respondents (100%) were new to university, having been in the enabling program for less than three months. Almost all were from an Australian-English/Irish/European cultural background (71%). In terms of the discipline or course they intended to study at university, responses were evenly distributed between the students' preferred disciplines, such as Arts and Humanities (19%), Education (16%), Nursing and Midwifery (15%) and Business and Law (11%).

RQ1. Do enabling students tend to predominantly adopt more surface level strategies than deep learning strategies?

In terms of the types of learning approaches used by these respondents, results reveal higher levels of agreement with the use of deep learning strategies. That is, 82% of respondents both strongly agreed and agreed with the statements in question 10 (use of strategies related to a deep learning approach), as compared with 19% who both strongly agreed and agreed with the statements in question 9 (strategies related to a surface learning approach). As mentioned earlier, respondents were not made aware beforehand that these statements related to any particular learning approach.

RQ2. What kind of learning strategies do enabling students tend to utilise?

The results of this study suggest that the majority of enabling students use strategies commensurate with a deep learning approach to their studies. In particular, the most common deep learning strategies found to have been adopted by the respondents were: thinking about how they can apply what they have learnt at university to future careers (long-term goals) (90%), supporting their own ideas in their writing with evidence from texts they have read (critical thinking) (84%), looking for main ideas, themes and concepts in the texts they read (comprehension) (83%), submitting assessments on time (effective time management) (78%), and reflecting on what they have learnt (reflective thinking) (75%).

Despite the results showing that enabling students appear to predominantly adopt more deep learning strategies, there were also a few strategies for surface learning adopted by them. These surface learning strategies include not reading additional recommended materials (62%), focusing mainly on assessments that need to be completed (or on short-term goals) (83%) and feeling anxious and stressed about their studies (62%).

RQ3. Does the discipline which enabling students wish to study at university influence their adoption of deep learning strategies?

In terms of whether the learning strategies that the enabling students adopted differed according to their chosen discipline, the results of this study appear to show that, regardless of the discipline they were in, the majority adopt deep learning strategies in their studies.

Discussion

The results of this small-scale study on the learning strategies used by enabling students appear to both support and contradict existing literature on deep and surface learning approaches to learning. On the one hand, the findings support Wang's (2013) finding that the learning approach adopted by students does not depend on the discipline in which they are studying. On the other hand, the findings from this study contradict other research which has found that undergraduate students tend to adopt a surface approach to learning (Brown et al., 2015; Turner & Baskerville, 2013; Donnison & Penn-Edwards, 2012; Laird, Shoup & Kuh, 2005; Entwistle & Peterson, 2004). Thus, it seems puzzling as to why the majority of enabling students, who are pre-undergraduates, demonstrate knowledge of and belief in their use of strategies for a deep learning approach in the face of literature which would suggest otherwise. Some possible reasons are outlined below.

Previous studies have shown that a student's learning approach can vary according to the nature of the learning and assessment task, what the teacher is assessing, the nature of support for the student, program content and teaching quality, relevance of program content to students' interests and student workload (Dohlmans et al, 2016; Brown et al, 2015; Turner & Baskerville, 2013; Wang, 2013; Laird Shoup & Kuh, 2005; Chan, 2004). Furthermore, students can alternate between both surface and deep learning strategies depending on the task at hand (Ramsden, 2003). In this study, the nature of the program and the support students received may have led to them adopting a deep learning approach. For example, the Uniprep program has a specific curriculum design (Lane & Sharp, 2014) that is adapted to ensure students develop the skills and behaviours correlated with academic persistence and success (e.g. risk-taking, goal setting, openness to change, identity shifts, engagement with peer support and friendship). In addition, in the specific Learning Skills unit, strategies to manage information, to connect information from different sources, paraphrase and were explicitly taught, practiced and assessed. Throughout the unit, students had opportunities to audit and reflect on the development of skills and strategies for learning and all strategies were explicitly taught, practiced over the length of the unit and assessed. Thus, these may be a reasons why the students appeared to adopt a deep learning approach as the tasks they undertook demanded learning strategies cognisant with such an approach.

Furthermore, Relf et al's (2017) study of enabling programs from three universities (which included the Uniprep program) shows a high level of satisfaction for the teachers, teaching quality, program materials, student support and educational environment provided by ECU. As found earlier, the literature shows that "good teaching", a focus on "independent learning", feedback (Wang, 2013; Ramsden, 2003) and "learner-centred" conditions (Laird, Shoup & Kuh, 2015) can help engender a deep learning approach among students. This is evident in the case of this program where the cohesion, connectedness and coherence (3C) model adopted in its design has helped develop the "confidence, skills and knowledge" of enabling students for their move to their undergraduate year (O'Rourke et al, 2014; Sharp et al, 2014). Therefore, it appears likely that the quality of teaching and educational environment which the students in this study have experienced in their university's enabling program may have contributed significantly to their adoption of deep learning strategies.

Although not the focus of this study, the literature shows that "intrinsic motivation" (Turner & Baskerville, 2013), "achievement motivation" (Lau, Liem & Nie, 2008) and the willingness to collaborate (Biggs & Tang, 2007) are some factors associated with a deep learning approach.

As these students were inclined to fill in the survey, they very likely take their learning seriously.

Contrary to research which argues that the deep learning approach can allow for students to feel enjoyment of their studies and that the surface learning approach can be connected to feelings of anxiety (Wang, 2013), the majority of these enabling student respondents in this study who adopt deep learning strategies express feelings of anxiety about their studies. This is a realistic outcome as these students would still be continuing to develop in their capacity to manage their workload for their university studies and as pointed out by Ramsden (2003), students can adopt both surface and deep learning strategies at the same time depending on their needs and purpose. This is reflected in the findings of this study which show that a majority of the enabling students adopt strategies for deep learning while adopting the surface learning strategy of focusing mostly on their assessments' completion (considered as part of short-term goals).

In previous studies, a deficit model for enabling students might have been conceived since students undertake pathway or enabling programs because they do not meet the requirements of university entry. As such, they could be considered as lacking the requisite academic skills and knowledge for first year undergraduate studies. However, the possible conception of a deficit model for enabling students is contradicted by the results of this study which show the capability of these learners to engage well with their program content by adopting learning strategies cognisant with a deep learning approach.

Finally the findings in this study reflect what has been found in the literature where the discipline type does not necessarily determine the learning approach adopted by students (Wang, 2013). Rather, the determinants of which learning approach is adopted by students could include the type of assessment and their workload. This means students faced with an overly heavy workload might choose to use the surface approach to be able to manage their studies (Wang, 2013), while certain assessments might require memorisation of facts and regurgitation of specific details which would entail the use of the surface learning approach (Laurillard, 1997; Yin & Desierto, 2016).

Conclusion

This study has been premised on the holistic nature of education as espoused by Vygotsky (1994) in his social constructivist philosophy where learning is viewed as a social process involving students, educators and the larger environment to develop the learner so that they then influence the larger social context. This process also involves an examination of the cognitive and sociological worlds of learners, including approaches or dialectical connections adopted by students to make meanings of their worlds. In focusing on the deep and learning strategies used by enabling students, the researchers have sought to shed light on a part of this phenomenon in order to obtain a more complete picture of the learning that occurs in enabling students.

To conclude, future research into enabling students could not only examine the dialectical connections, but also study the quality of academic knowledge and skills, intrinsic motivation and other personal factors which might provide a comprehensive picture of why these learners adopt deep learning approaches to their studies.

Acknowledgements

The authors wish to thank the students who participated in this study and the unit coordinator, lecturers and tutors of the Learning Skills unit, UniPrep, at ECU for allowing the link to the online survey instrument to be embedded in the unit's site on Blackboard (LMS).

Note: This study was approved by the Ethics Committee at ECU (Project Code: 17382).

References

- Biggs, J. & Tang, C. (2007). *Teaching for quality learning at university*. (3rd ed.). Berkshire, UK: Oxford University Press.
- Blake, B. & Pope, T. (2008). Developmental psychology: Incorporating Piaget's and Vygotsky's theories in classroom. *Journal of Cross-disciplinary perspectives in education*, 1(1), 59-67.
- Brown, S. White, S. Wakeling, L. & Naiker, M. (2015). Approaches and Study Skills Inventory for Students (ASSIST) in an Introductory Course in Chemistry. *Journal of University Teaching & Learning Practice*, 12(3). Article 6.
- Burton, L., Taylor, J., Dowling, D., & Lawrence, J. (2009). Learning approaches, personality and concepts of knowledge of first-year students: Mature-age versus school leavers. *Studies in Learning, Evaluation, Innovation and Development*, 6(1), 65-81. Retrieved from <http://sleid.cqu.edu.au>.
- Chan, C. (2004). *Medium of instruction and students' learning approaches in the subject economics at the post-secondary level* (Masters dissertation). Retrieved from <http://sunzi.lib.hku.hk/hkuto/record/B31963614>.
- Dohlmans, D., Loyens, S., Marcq, H., Gijbels, D. (2016). Deep and surface learning in problem-based learning: A review of the literature. *Advances in Health Sciences Education*, 21(5), 1087-1112.
- Donnison, S., & Penn-Edwards, (2012). Focusing on first year assessment: Surface or deep approaches to learning. *The International Journal of the First Year in Higher Education*, 3(2), 9-20.
- Enabling Retention: Improving student retention in university-based enabling programs (2018). Retrieved from <http://enablingretention.org.au/>
- Entwistle, N., & Peterson, E. (2004). Conceptions of learning and knowledge in higher education: Relationships with study behavior and influences of learning environments. *International Journal of Educational Research*, 41, 407-428. Retrieved from http://www.elsevier.com/wps/find/journaldescription.cws_home/491/description
- Hattie, J.A.C. & Donoghue, G.M. (2016). Learning strategies: A synthesis and conceptual model. *Science of Learning*, 1(16013), 1-13. doi:10.1038/npjscilearn.2016.13.
- Hermida, J. (2015). *Facilitating deep learning pathways to success for university and college teachers*. Toronto, Canada: Apple Academic Press.

- Kember, D. & Gow, L. (1989). A model of student approaches to learning encompassing ways to influence and change approaches. *Instr Sci*, 18(263), 263-288. doi:10.1007/BF00118014
- Laird, T.F., Shoup, R. & Kuh, G.D. (2005). Measuring deep approaches to learning using the National Survey of Student Engagement. Paper presented at the Annual Meeting of the Association for Institutional Research, May 14-May 18. Retrieved from nsse.indiana.edu/pdf/conference_presentations/2006/air2006deeplearningfinal.pdf
- Lamon, M. (2018). *Learning theory-constructivist approach*. Retrieved from <http://education.stateuniversity.com/pages/2014-Learning-Theory-CONSTRUCTIVIST-APPROACH.html>
- Lane, J. & Sharp, S. (2014). Pathways to success: Evaluating the use of enabling pedagogies in a university transition course. *GSTF International Journal on Education* 2(1), 66-74.
- Laurillard, D. (1997). *The Experience of Learning: Implications for Teaching and Studying in Higher Education*, in F. Marton, D. Hounsell and N. Entwistle (eds.). Edinburgh, UK: Scottish Academic Press.
- Lau, S., Liem, A.D. & Nie, Y. (2008). Task and self-related pathways to deep learning: The mediating role of achievement goals, classroom attentiveness, and group participation. *British Journal of Educational Psychology*, December, 78(Pt 4), 639-62. doi: 10.1348/000709907X270261
- Liu, C.H., & Matthews, R. (2005). Vygotsky's philosophy: Constructivism and its criticisms examined. *International Education Journal*, 6(3), 386-399.
- Marton, F. & Saljo, R. (1976). On qualitative differences in learning. I – outcome and process. *British Journal of Educational Psychology*, 46, 4-11.
- Ramsden, P. (2003). *Learning to teach in higher education* (2nd ed.). London, UK: Routledge Palmer.
- Relf, B., O'Rourke, J. Crawford, N., Sharp, S., Hodges, B., Shah, M. & Barnes, R. (2017). *Lighting the path(way): Articulating curriculum design principles for open access enabling programs*. Retrieved from <http://www.newcastle.edu.au>
- Ryan, J. & Louie, K. (2007). False Dichotomy? 'Western' and 'Confucian' concepts of scholarship and learning. *Educational Philosophy and Theory*, 404-417. doi: 10.1111/j.1469-5812.2007.00347.x
- Sharp, S., O'Rourke, J., Lane, J. & Hayes, A. M. (2014). Cohesion, coherence and connectedness: A 3C model for enabling-course design to support student transition to university. In *Proceedings of the Joint AARE-NZARE Conference*. Retrieved from https://www.aare.edu.au/data/2014_Conference/Full_papers/SHARP_14.pdf
- Turner, M. & Baskerville, R. (2013). The experience of deep learning by accounting students. *Accounting Education*, 22(6), 582-604. doi:10.1080/09639284.2013.847323

- University of Oxford (2017). *Student Approaches to Learning, Paper 2*. Institute for the Advancement of University Learning. Retrieved from <https://www.learning.ox.ac.uk/support/teaching/resources>
- Vialle, W., Lysaght, P., & Verenikina, I. (2005). *Psychology for educators*. Southbank, Australia: Thomson.
- Vygotsky, L.S. (1987). *Collected works of L.S. Vygotsky, Volume 1: Problems of general psychology (transl. Norris Minick)*. New York, NY: Plenum.
- Vygotsky, L.S. (1994). The Socialist Alteration of Man. In R van de Veer & J Valsiner (Eds), *The Vygotsky Reader* (pp. 175-185). Oxford, UK: Blackwell Publishers.
- Wang, J. (2013). *The Effects of Deep Approaches to Learning on Students' Need for Cognition Over Four Years of College* (Doctoral dissertation). Retrieved from <http://ir.uiowa.edu/etd/4924>
- Wingate, U. (2007). A Framework for Transition: Supporting 'Learning to Learn' in Higher Education. *Higher Education Quarterly*, 61(3), 391-405.
- Yin, K. & Desierto, A. (2016). *Legal Problem Solving and Syllogistic Analysis*. Chatswood, Australia: LexisNexis Butterworths.