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**Pre-service Teachers' Perceptions of
Authentic Learning in a Capstone Unit**

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Pre-service Teachers' Perceptions of Authentic Learning in a Capstone Unit

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Abstract

Capstone units in higher education courses are learning experiences which are designed to bring reflection and focus to a whole course of study while, at the same time, leading students toward their entry into a new world of work (Humphrey, Brown, & Benson, 2005). The capstone experience described in this paper runs as a conference, called the Stepping Out Conference. The conference is delivered as one unit and is mandatory for all fourth year pre-service teachers. Participation in a capstone unit is an effective way for students to begin thinking of themselves as teaching professionals rather than as continuing students. Students engage in the assessment as part of their capstone experience. The assessment is designed to measure students' knowledge and skills as they relate to "authentic" real life situations (Darling-Hammond, 1991). This paper details pre-service teachers' experiences of authentic learning through their participation in a capstone unit.

Keywords: authentic curriculum, capstone experience, student perception

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Introduction

As demand for work-ready graduates increase, final-year capstone experiences have become a focal point for discussion across many universities. Capstone experiences have been implemented in a variety of disciplines including, Education (Artzt, Sultan, Curcio, & Gurl, 2012), Business (Payne, Flynn & Whitfield, 2008), Information Technology (Steiger, 2009) Law (McNamara, Kift, Field, Butler, Brown & Gamble, 2010), Pharmacy (Patel, Hadley, Shah, Pate & Sen, 2015), Sociology (Hauhart & Grahe, 2010; McKinney & Busher 2011) and Psychology (Baker, McCutcheon & Keilin, 2007). Overall, capstone experiences have three major purposes. First, they consolidate students' learning and experiences over the course of their studies (Bailey, Oliver & Townsend, 2007); they provide students with opportunities to engage in professional socialization, and professional identities for future employment (Dunlap, 2005); and finally they allow students to demonstrate what they have mastered in relation to what is required for graduation (van Acker & Bailey, 2011).

An important aspect of capstone experiences is that they form part of an authentic curriculum. Assessment in such a curriculum guide students in their understanding of how capstone experiences connect their university studies with the "real world" of work. The purpose of this paper is to outline a case study in which perceptions of soon-to-be graduating education students in the Faculty of Education at a large university in Queensland, Australia are investigated. A capstone unit provides opportunities for final year pre-service teachers to reflect more deeply about the interrelationships between the theory, knowledge and practice they have learned throughout their course. The paper begins with an explanation of the main features of a capstone experience and then specifically the *Stepping Out Conference* as a capstone experience for fourth-year Bachelor of Education pre-service teachers. The paper also includes a description of Sill, Harward, and Cooper's (2009) conceptual framework for designing a capstone unit that incorporates authentic assessment before discussing students' perceptions of their capstone experience.

Overview of a Capstone Experience

Capstone units encompass a culmination of personal, professional and academic learning experiences (Rowles, Koch, Hundley & Hamilton, 2004). It has been long recognised that learning takes place over the duration of education courses, rather than in isolated units of study. However, a capstone unit provides students with an opportunity to link previously acquired knowledge and skills from across a whole course of study with new and/or reconstructed understandings (Cochran-Smith & Lytle, 1999). Through engaging in deep reflection, capstone units prepare students for entering the world of work (Humphrey, Brown & Benson, 2005). Castor and Leeds-Hurwitz (2004) describe capstone experiences as "stepping stones" where students have opportunities to apply theory to practice. Through this

intersection students are able to make personal meaning of their experiences as they occur in a real world situation.

Capstone experiences take a "best fit" approach and therefore there is much variability in capstone experiences across disciplines. Fernandez (2006), for example, describes where a capstone experience for Humanities/Social Science students did not align with all students' study pathways. The focus was changed from student learning in one course to integrating learning across the curriculum through a sequence of interdisciplinary classes. An important component to consolidate this integration was the development of an assessment that allowed students to demonstrate the learning acquired over their four-year course. Students were required to submit a written paper and present a poster or other creative expression of their learning. Sum and Light (2010) implemented a capstone assessment wherein Political Science students developed a paper on a current affair issue which they then delivered to an assessment panel. These students were required to complete a course mapping exercise where they identified key learning in which they had engaged over their four years of study as well as completing an exit survey in which they made recommendations for future students as a way to pass on the torch of learning. Herner-Patnode and Lee (2009) described using web-based portfolios in a pre-service teacher education course for students gaining a Master's degree in Early Childhood. This capstone experience ran as a year-long series of seminars that culminated in a final portfolio presentation.

In each case described above, assessments in capstone experiences were designed to help students portray essential learning they gained in completing their degree. Assessment was an integral component for students to complete in order to engage in the experience more fully. While assessment is a key component of capstone experiences, there needs to be identifiable purposes for the experience and, ultimately, the assessment. The various approaches to providing and assessing capstone experiences are not unique to one discipline area. That is, there are overlaps; however, each discipline area has adapted the experience to provide a "best fit" for the students undertaking the experience. Below is a description of how a capstone experience has been applied for final year pre-service education students.

The Stepping Out Conference as a Capstone Experience

The capstone experience described in this paper has been running in the Faculty of Education since 2007 as a three-day conference, *The Stepping Out Conference*. The conference is a core final-year subject and so must be attended by all fourth-year graduating students (approximately 400 students each year, although numbers vary from year to year). While the subject is mandatory for all undergraduate pre-service teachers, post-graduate pre-service teachers are also invited, although it is not compulsory for them to attend. In 2014, a total of 410 participants registered for the conference, 20.2% of the participants were male, 79.8% female. The majority of participants are aged 21-24 years (76.77%). The participants were enrolled in early childhood (17.17%), primary (45.96%), and secondary (36.97%) education courses.

The *Stepping Out Conference* is scheduled with keynote speakers, panel sessions, breakout sessions, and a Careers Market over three days. The conference provides pre-service teachers with an opportunity to interact with speakers from across the education sector, including school principals from both rural and urban schools and from each sector of schooling (early years to secondary). For example, attendees have the opportunity to question a panel of first-year teachers about their experiences of getting that first important job in teaching to their experiences on the job. Specialist sessions provide information about current and emerging issues, for example, alternative pathways into teaching, cybersafety in the classroom, preventing teacher burnout, and the general procedures for applying for teacher registration. There is also a Careers Market during the conference where a range of potential employers, teacher associations, and education resource providers set up booths which the pre-service teachers attend to gain other perspectives of education and educational resources.

Of particular importance for the capstone experience described for pre-service teachers in this paper is relevant assessment which is designed to measure students' actual competencies as they relate to "authentic" real life situations (Darling-Hammond, 1991). Therefore, a key aspect of the assessment pieces for the education students at the *Stepping Out Conference* is the opportunity for students to demonstrate their knowledge, skills and abilities in relation to Queensland College of Teachers' (QCT's) Professional Standards. In Queensland, the learning objectives of under-graduate education courses are mapped to the Professional Standards. By the end of fourth-year, pre-service teachers must have demonstrated successful attainment of all ten Professional Standards, both in their course work and on their school practicum to graduate. The assessment delivered through the *Stepping Out Conference*, then provides an opportunity for pre-service teachers to demonstrate a culmination of their learning in relation to QCT's Professional Standards.

The Professional Standards align to three main areas of professional development: (1) Teaching and Learning (QCT's PS 1-5), (2) Relationships (QCT's PS 6-9), and Professional Practice and Renewal (QCT PS 10). For their first assessment, pre-service teachers present a poster to their peers indicating how they have met each of the ten Professional Standards throughout their course, field and work experiences. For their second assessment, students individually submit a reflective essay, which is comprised of two parts. Part A involves students critically reflecting on QCT's Professional Standards and identifying their professional strengths and learning needs as soon-to-be graduating teachers. Part B involves students considering how their professional identity as a teacher has developed throughout their education course. In this section, students refer to at least three speakers from the *Stepping Out Conference*, detailing how the speakers have helped them to think more deeply to consolidate their understanding of their role as a teacher and their philosophy of teaching. These Professional Standards are depicted in Table 1.

Table 1. *Professional Standards for Teaching*

Professional Development Area	QCT Professional Standards
Teaching and learning	<i>Standard 1</i> Design and implement engaging and flexible learning experiences for individuals and groups <i>Standard 2</i> Design and implement learning experiences that develop language, literacy and numeracy <i>Standard 3</i> Design and implement intellectually challenging learning experiences <i>Standard 4</i> Design and implement learning experiences that value diversity <i>Standard 5</i> Assess and report constructively on student learning
Relationships	<i>Standard 6</i> Support personal development and participation in society <i>Standard 7</i> Create and maintain safe and supportive learning environments <i>Standard 8</i> Foster positive and productive relationships with families and the community <i>Standard 9</i> Contribute effectively to professional teams
Professional practice and renewal	<i>Standard 10</i> Commit to reflective practice and ongoing professional renewal

Source: Queensland College of Teachers (QCT) (2006). *Professional Standards for Queensland Teachers*. Brisbane: Queensland College of Teachers.

As written, the Professional Standards provide a framework and a common language for teachers to identify and express their professional selves. Students learn about the Professional Standards as a developmental process, starting in the first year of their course. Each unit students take over their four years of study are aligned to some of the Professional Standards as learning objectives relevant to the content of their unit. In this way, students learn how theory connects to the Professional Standards from the start and how they can take this knowledge into their practicum experiences to implement the Professional Standards in real world situations. The Professional Standards for teaching in Australia aim to ensure the quality of the teaching profession, particularly at the point of entry, by making the knowledge and capabilities of teachers explicit (Mayer, Mitchell, MacDonald & Bell, 2005). The assessment is designed to allow students to demonstrate having met the QCT Standards. In its structure and the assessment the *Stepping Out Conference* closely aligns with Sill, Harward and Cooper's (2009) conceptual framework for capstone experiences, as described below.

The Framework of a Capstone Experience for Education Students

Sill, Harward and Cooper's (2009) proposed that there needs to be a strong rationale for including capstone experiences for graduating students and suggested that there are four essential elements necessary to ensure successful capstone experiences. The first element is *integration*, where the three or four years of undergraduate learning in a particular discipline are woven together into a coherent whole. The second purpose is *breadth*, which refers to moving students beyond their area of specialisation by offering a more global understanding of their discipline. Another purpose is *application*, in which students produce a product that demonstrates their understanding of a specific focus within their discipline. The final purpose is *transition*, where the capstone experience is designed to assist students in their transition from university into the world beyond. The case study presented in this paper uses Sill, Harward and Cooper's (2009) essential elements of a capstone experience as a conceptual framework.

As described above, the purpose of the *Stepping Out Conference* brings together the culmination of learning over the four-year Bachelor of Education degree. This learning incorporates theory and work from university lectures and tutorials, students' field experience (also known as practicum) as mapped out by QCT's Professional Standards and what is expected of graduate teachers in the various education sectors (such as registration requirements by Education Queensland). In this, the conference adheres to the first element of Sill, Harward and Cooper's framework, which is *integration* of learning over the course of study (Sill, Harward & Cooper, 2009). For example, in their first assignment pre-service teacher must make connections between university learning and the learning that occurs for them as pre-service teachers across three school practicums. Speakers at the conference add further learning by providing current industry information, such as speakers who outline the process on how graduate teachers need to apply for jobs. This overall structure encourages students to collate various sources of information into a collected understanding of what it means to be a professional teacher and how to go about doing the job.

The conference is organised along the same format as any professional conference. Professionals from the industry are invited to present sessions, bringing the "real world" of education to the students. This aspect of the conference relates to the idea of *breadth* (Sill, Harward & Cooper, 2009). For example, speakers from the various education departments such as the Queensland Department of Education and Training (controlling all public schools in Queensland), Catholic Education and Independent Schools of Queensland present on current policy, procedure and practices. There are also two panels held during the conference. The first is a panel of school Principals from each of the school sectors – early childhood, primary and secondary – who talk about what they expect when hiring new teachers. The second is a panel of early years teachers, who are recent graduates of the Faculty of Education at our university. These early career teachers describe their real world experiences about gaining employment upon graduation, providing

valuable insight into what pre-service teachers might encounter upon leaving university and how they might handle the process of getting a job. This facet of the conference aligns with Sill, Harward and Cooper's concept of *transition* as students have opportunities to consider how they can use their learning to prepare for work as a graduate teacher.

Themes for the conference reflect what is currently relevant within teaching and education. For example, the themes for the 2014 conference were: teacher well-being, career pathways for teachers, and cyber-safety awareness. *Application* (Sill, Harward & Cooper, 2009) is demonstrated through the presentation of a poster to peers, upon that illustrates how pre-service teachers have met each of the ten QCT Professional Standards by referring to their course work, field experience or information gathered from the *Stepping Out Conference*, or through all three. When students can draw upon all three sources they are then not only adhering to the purpose of *application* but also *integration*. Professional dialogue between peers is a key component in consolidating students' understanding of the Professional Standards. Peer-to-peer exchange is an essential aspect in generating a shared language around the Professional Standards whilst simultaneously enhancing professional learning and understanding.

An example of how students may illustrate their learning for their poster presentations can be seen in the following situation. When students engage in field experiences in schools they must develop and deliver lesson plans. To meet QCT Professional Standard 1: *Design and implement engaging and flexible learning experiences for individuals and groups*, students might indicate that the Professional Standard was met by incorporating the use of Information Communication Technologies (ICT) in the classroom to help the students engage with the content in a different contextual environment. On their posters students can display photographs of themselves teaching in the classroom, display work they or their students have completed or include their actual lesson plans. Feedback on their poster presentation is provided by peers during tutorials. Students can then use this feedback to refine their displays before submitting their final copy for marking. In support of the information they present to peers, students are obliged to also submit a written summary of each of the Professional Standards that they displayed on their posters. The structure of the assignment can be seen as an authentic assessment for learning in that students can use peer feedback to improve their final product before submission and then further use this product to prepare for their teacher registration interview. This final element relates to Sill, Harward and Cooper's (2009) concept of *transition* in that the pre-service teachers' reflections go beyond their coursework to considering how their coursework will help them get a job teaching.

Students often describe in their essay reflections that they intend to incorporate their learning from the *Stepping Out Conference* into their teaching philosophy, which is another indication that the assessment has provided them with the opportunity to think about their roles as a teacher beyond the formal curriculum. The impact of the quality and relevance of information for students

comes from the fact that it is presented by professionals representing the real world of education where students can clearly see how to apply this learning to their future teaching careers. The capstone experience reflects reality in that it mirrors what occurs at any teacher conference the students may attend in their professional lives; poster presentations are an authentic activity at conferences.

Transition (Sill, Harward & Cooper, 2009) is about assisting pre-service teachers in their movement from university into the world beyond. The name of the conference, *Stepping Out*, is students' first formal and real indication that their transition into the world beyond university has begun; that is, they are "stepping out" of their lives as students and into their lives as teachers. The conference is structured differently to the other subjects undertaken in their four-year course (lectures followed by tutorials), which provides another signal that the learning pattern has changed. Students must register for the conference sessions in the same manner as if they were teachers attending a professional development conference. Indeed the notion that students must conduct themselves as professional teachers at the conference is reinforced. The connection between their university studies and the real world of teaching is in their assessment pieces, and these have been designed to have students considering not only what they have learned and experienced over the course of their studies but also to project as to how they can use what they have learned in their teaching careers. Education students in Queensland must sit a panel-interview in order to gain registration as a teacher so their assessment pieces help them develop their ideas in preparation for this interview. In this, students are able to identify real links between the conference and their transition into their future teaching careers. Student feedback indicates a good understanding of this process:

I think the conference was an excellent way to prepare us before our last semester. It is so beneficial to have a bigger picture/goals to work on. It reminded me of why I became a teacher, the journey ahead, all of the positive and negative to come along the way...helps us to prepare for all that. [student feedback]

It has made me think about the different opportunities available in different geographical areas and emphasized the importance of my passion for education and how it can change a child's life and ultimately benefit the community, both locally and globally. [student feedback]

It has been a very informative three days. The conference was a great opportunity to learn skills to help during my beginning years, challenged my thoughts on where to teach and amped up my passion for teaching [student feedback]

Student Perceptions

The effectiveness of any capstone experience can best be evaluated through the perceptions of the participants. In the following section we provide pre-service teachers' responses to set survey questions as well as unsolicited feedback they provided in relation to attending the conference. In answering the survey, pre-service teachers rated the importance of each session and their perceptions of the overall conference gained through attending session that they felt enhanced their development as a teaching professional. Each presentation was scored on a 5-point likert scale from 1 ("not important") to 5 ("very important"). To determine how conference sessions contributed to education students' professional development, the total percentage of participants that rated each session as "important" or "very important" were summed together (see Table 1). A total of 88.19% of participants indicated that the *Stepping Out Conference* was valuable and useful in preparing them for the teaching profession. Table 1 suggests that the presentations valued most by pre-service teachers were (1) learning strategies for preventing teacher burnout (93.94%), (2) learning how to protect both themselves and students from cyber-safety related issues (93.43%), and (3) gaining Principals' perspectives of what is expected of beginning teachers in the early years of teaching (89.04%).

Table 2. *Pre-Service Teachers' Perceptions of Conference Presentations*

Presentation	M	SD	(%)
Preventing Burnout in the Early Years of Teaching	4.59	.60	93.94
Being a Cyber-Smart Teacher	4.68	.59	93.43
Panel of School Principals	4.38	.88	89.04
Teacher Registration and Employment in Queensland	4.48	.78	87.74
Panel of Early Career Teachers	4.41	.77	81.89
Employment in Rural Queensland	4.34	.86	78.71
Careers Market	3.91	.96	60.00
Teacher Support Roles in Schools: Teacher Aide, Guidance Officer, Teacher Librarian	3.69	.89	56.06
Alternative Pathways to Teaching 1: Service Learning in Bhutan	2.95	.84	48.99
Address by Minister for Education	3.64	1.03	48.03
Alternative Pathways to Teaching 2: Teaching in Tanzania	3.71	1.08	21.26
Overall value and usefulness of conference	4.43	.75	88.19

N. B. Scale range = 1-5

Items that were perceived as less important were sessions on alternative pathways to teaching in sectors not immediate to the pre-service teachers' preferred employment trajectories (e.g. teaching in Bhutan: 49% found this

important; and teaching in Tanzania: 21% found this important). It should be noted that these presentations were offered as alternative ways of conceptualizing teaching and learning rather than as alternative pathways for the conference attendees in their future employment. These results could be interpreted that while the sessions were mildly interesting to the pre-service teachers they were not highly important.

Pre-service teachers provided additional feedback in relation to the effectiveness of the authentic assessment in preparing them for their future teaching roles.

One student noted:

To be completely honest, I have been questioning my proficiency as a teacher for the last few months as graduation edges closer and closer. But thanks to the conference and the amazing feedback I received from my poster presentation I feel confident and ready to take on my final field experience and internship [student feedback]

Another student noted:

The assessment was meaningful because I had to critically think about how my experiences throughout my degree have helped me to meet the Professional Standards for teaching. I also think that the poster presentation helps you think about how you would promote the work you have done to a potential employer [student feedback]

Pre-service teachers began to describe themselves as professionals and started to reflect more deeply about what steps they needed to take upon graduation to gain employment as a teacher. The feedback suggested that students were thankful for the capstone experience and the advice provided by professionals in the field:

It has eased my mind with taking the next step from student to professional. Wonderful to hear from principals and find out what was important to them with the interview process and what they look for in an applicant [student feedback]

It has really felt like I am transitioning between Student and Teacher. I feel that the information has been great and helped me to conceptualise the things I need to do to complete my transition [student feedback]

I feel that this conference has solidified a lot of my learning and also extended it. It has given me far more confidence in myself and I feel more prepared and knowledgeable [student feedback]

For me it reinforced the honour of the profession and highlighted the passion that good teachers have for what they do. They were honest

about the challenges yet still believed the rewards outweighed the difficulties. Their love for educating was so clearly evident and uplifting. I hope one day I can inspire people in that same way [student feedback]

Conclusion

In this paper it was demonstrated the *Stepping Out Conference* as a capstone experience provides students with the opportunity to consolidate and extend their learning over the four years of their course, and to engage in authentic assessment that assists them in preparing for their final field experience and internship as well as their teacher registration interview. The *Stepping Out Conference* provided an opportunity for students to professionally engage in dialogue with education leaders and gain valuable insights about the complexities of teaching during the early years of their career. When students were asked to provide feedback as to what would further enhance the conference they indicated that they would like more information on preparing for their teacher registration interviews and more time in breakout sessions (organized according to phase of schooling - early childhood, primary or secondary) to discuss pertinent issues such as classroom management, student testing using the National Assessment Program Literacy and Numeracy (NAPLAN). These suggestions are useful for planning the conference in future years and suggest that there are still some gaps in preparing education students to successfully and smoothly transition into the teaching profession. Despite this, it would appear that capstone units play an important role in helping students enter the world of teaching.

Finally, whilst there are many positives related to this capstone experience, there is however, a very large time commitment involved in preparing the unit. The logistics in preparing this capstone experience are similar in many ways to those one would encounter in convening any conference. Booking the venues, inviting presenters to come and speak, blocking off time for the conference to be held on campus all must be considered. In an evaluation of a capstone process at the University of North Colorado (UNC) as reported by Shaw (1994), Faculty educators indicated that teaching a capstone unit was very time consuming, equating teaching the capstone course to that of teaching two units. The conference also caters for three phases of schooling (early childhood, primary and secondary) and therefore careful planning is required to ensure the needs of graduates from each education program are considered and addressed. The *Stepping Out Conference* is held during Orientation Week, second semester which means that students relinquish a week of their holidays to attend; however, one hopes that students can balance this small inconvenience in relation to what they are being offered. A particular strength of this capstone unit is the ability of the unit coordinator to make changes each year to reflect current issues relevant to teaching in Australia.

References

- Artzt, A., Sultan, A., Curcio, F., & Gurl, T. (2012). A capstone mathematics course for prospective secondary mathematics teachers. *Journal of Mathematics Teacher Education, 15*(3), 251-262. DOI= 10.1007/s10857-011-9189-5.
- Bailey, J., Oliver, D., & Townsend, K. (2007). Transition to practitioner: redesigning a third year course for undergraduate business students. *Journal of Management and Organization, 13*(1), 65-80.
- Baker, J., McCutcheon, S., & Keilin, W. G. (2007). The internship supply-demand imbalance: The APPIC perspective. *Training & Education in Professional Psychology, 1*(4), 287-293. DOI= 10.1037/1931-3918.1.4.287.
- Castor, T., and Leeds-Hurwitz, W. (2004). Capstone as stepping stone. *Communication Teacher, 18*(2),61-64.
- Cochran-Smith, M. & Lytle, S. L. (1999). Teacher learning in professional communities: Three knowledge-practice relationships. In P. D. Pearson & A. Iran-Nejad (Eds.), *Review of research in education*, volume 24 (pp. 251–307). Washington DC: American Educational Research Association.
- Darling-Hammond, L. (1991). The implications of testing policy for quality and equality. *Phi Delta Kappan, 73*, 220-225.
- Dunlap, J. (2005). Problem-based learning and self-efficacy: how a capstone course prepares students for a profession. *Educational Technology, Research and Development, 53*(1), 65-85.
- Fernandez, N. P. (2006). Integration, reflection, interpretation: realizing the goals of a general education capstone course. *About Campus, May-June 2006*, 23-26.
- Hauhart, R. C., & Grahe, J. E. (2012). A national survey of American higher education capstone practices in sociology and psychology. *Teaching Sociology, 40*(3), 227-241. DOI= 10.1177/0092055X12441715.
- Herner-Patnode, L. M., & Lee, H. (2009). A capstone experience for pre-service teachers: Building a web-based portfolio. *Educational Technology & Society, 12*, 101-110.
- Herrington, A., & Herrington, J. (2006). What is an authentic learning environment? In A. Herrington & J. Herrington (Eds.), *Authentic learning environments in higher education* (pp. 1-13). Hershey, PA: Information Science Publishing.
- Humphrey Brown, A., & Benson, B. (2005). Making sense of the capstone process: Reflections from the front line. *Education, 125*, 674-692.
- Mayer, D., Mitchell, J., Macdonald, D., & Bell, R. (2005). Professional standards for teachers. A case study of professional learning. *Asia-Pacific Journal of Teacher Education, 33*(2), 159-179. DOI= 10.1080/13598660500121977.
- McKinney, K., & Busher, M. (2011). The sociology research experience capstone course at three institutions. *Teaching Sociology, 39*(3), 290-302.
- McNamara, J., Kift, S. M, Field, R. M., Butler, D. A., Brown, C., & Gamble, N. (2010). Work integrated learning as a component of the capstone experience in undergraduate law. In *Proceedings of the Australian Collaborative Education Network National Conference, 29 September-1October 2010*, Curtin University of Technology, Perth, Australia.
- Patel, R V., Hadley, D., Shah, C., Pate, S., & Sen, S. (2015). Pharmacy students' experience with a capstone unit. *American Journal of Health-System Pharmacy, 72* (1), 347-348. DOI= 10.2146/ajhp140643.

- Payne, S. L., Flynn, J., & Whitfield, J. M. (2008). Capstone business course assessment: Exploring student readiness perspectives. *Journal of Education for Business, January/February 2008*, 141-146.
- Rowles, C. J., Koch, D. C., Hundley, S.P., & Hamilton, S. J. (2004). Towards a model for capstones experiences: Mountaintops, magnets and mandates. *Assessment Update, 16*(1), 1-16.
- Queensland College of Teachers (QCT). (2006). Professional Standards for Queensland Teachers. Retrieved January 03, 2007 from <http://bit.ly/1FkP6az>.
- Shaw, A. R. (1994). *Performance-Based Evaluation of Student Learning: A Continuum from K-12 through the University Level: A Process Evaluation Report of the FIPSE Project*. East Lansing, MI, National Center for Research on Teacher Learning. (ERIC Document Reproduction Service No. ED 414844).
- Sill, D., Harward, B. M., & Cooper, J. (2009). The disorienting. The senior capstone as a transformative experience. *Liberal Education, Summer*, 50-55.
- Steiger, D. M. (2009). Enhancing knowledge integration: An Information System capstone project. *Journal of Information Systems Education, 20*, 17-23.
- Sum, P.E., & Light, S. A. (2010). Assessing student learning outcomes and documenting success through a capstone course. *Political Science and Politics, 43*(3). 523-531.
- Van Acker, L. & Bailey, J. (2012). Undergraduate business capstones: All you ever wanted to know. *HERDSA News, 34*(2), 22-23.