# The apprenticeship of teaching assistants: time to change?

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**Abstract:**

*Since the 1970s, TA teaching preparation has been the subject of a wide range of publications and research, which led to the development of workshops and programs departmentally and centrally to prepare TAs for their teaching duties and responsibilities. Despite opportunities available to graduate students, the majority take up their TA position without any proper preparation in pedagogy. If the existence of research, publications, programs, and workshops indicates the necessity for TAs to be prepared before and during their teaching assignments, and since most TAs are not properly prepared before they step into their TA position, what can be done to resolve this issue? In this article I critically analyze the apprenticeship model of learning, where a graduate student assists a professor, which currently dominates teaching assistant preparation. From my perspective, the TA role has been conflated with the graduate student role and it is time to challenge this dominant model with development of alternative TA learning strategies.*

## *Key Words:*

teaching assistants, apprenticeship model, apprenticeship pedagogy, graduate students, teaching preparation, workplace learning.

## Introduction

In most higher education institutions in Canada, graduate students hold a position as a teaching assistant (TA) that provides funding and the opportunity to experience an aspect of what it is like to teach undergraduate students. TAs occupy a short-term work assignment that does not require prior teacher preparation or demonstration of knowledge in the field of learning and teaching in higher education to perform the duties assigned. The way in which graduate students[1] fulfill the TA role is dependent upon the culture of the department, the duties assigned by the course supervisor, and his or her own experience and approach. Some departments provide a TA orientation or peer mentors to help TAs prepare for their duties, whereas others leave the responsibility completely to the course supervisor. Currently at most Canadian universities approximately one-third of first- and second-year courses have a tutorial, discussion, or lab component taught by TAs (of which the majority are first-year Masters (MA) graduate students) with the majority of the rest of the first- and second-year courses having TAs to help grade assignments, tests, and exams or perform other duties required for the course.

How to prepare TAs for their teaching obligations has been the subject of a wide range of publications and research (for e.g., Austin, 2002a; Austin, 2002b; Bellows, 2008; Boman, 2008; Cho, Kim, Svinicki, & Decker, 2011; Garland, 1983; Jones, 1993; Lambert & Tice, 1993; Lumsden et al., 1988; Marincovich, Prostko, & Stout, 1998; Nyquist, Manning, Wulff, Austin, Sprague, Fraser, Calcagno, & Woodford, 1999; Prieto & Meyers, 2001; Schonwetter, Ellis, Nazarko, & Taylor, 2004; Weber, Gabbert, Kropp, & Pynes, 2007). The bulk of the information identifies topics that TAs should be exposed to, such as basic teaching preparation for higher education classrooms and suggestions on how to familiarize TAs with this content through workshops and programs. Some of the information is specific to disciplines or labs, discussion groups, and tutorials – the common domains of TA supervision.

To provide this information to TAs, departments typically hold orientations and meetings that address some of the professional development needs of their graduate students, including preparation on how to fulfill their TA role. In examining this professional development preparation it is evident that departmental preparation is usually content-focused and often does not address pedagogical issues that may arise for TAs. Typically, preparation is based on the immediate goal of giving TAs just enough information to do their job[2].

To assist departments, learning and teaching centres offer support through programs and workshops that address issues pertaining to TAs' lack of skills and

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[1] In some institutions, undergraduate students are assigned TA roles. The focus of this paper is on the graduate student experience since graduate students comprise the majority of TA roles in Canadian post-secondary institutions.

[2] A TA position may include, but is not limited to the following responsibilities: keeping class records, creating/selecting class materials, presenting new material, leading, answering student questions, conducting review sessions, holding tutorial sessions, duplicating materials, preparing and collecting solutions to questions, providing feedback on assignments and exams, ordering and obtaining AV equipment/materials, setting up the lab, running tutorial or lab section(s), demonstrating procedures or setting up demonstrations, and cleaning the lab.

confidence. Programming typically begins with a non-mandatory campus-wide orientation that specifically addresses teaching and learning issues relevant to TA work. This is often followed by a variety of workshops available throughout each term, sometimes culminating with a certificate program. TAs are free to pick and choose which workshops and programs they wish to engage. If a TA does attend the workshops and programs offered by learning and teaching centres specifically for TAs, he or she will engage in pedagogical subjects and broad disciplinary needs, such as how to engage students in discussion and diversity in the classroom. Pedagogy-specific themes focus on the first day in class, grading, classroom management, and holding office hours—to name just a few—to more faculty/discipline specific themes such as how to run a lab in the sciences or facilitate discussions in the social sciences (Schonwetter, Ellis, Nazarko, & Taylor, 2004) but tend to focus on the "how" rather than the "why" (Hardré & Burris, 2012, p. 95). If a certificate is offered, it is often divided into stages that indicate a developmental model of teaching preparation.

Despite these efforts to help prepare TAs for teaching, many graduate students take up their TA role with little or no preparation. For example, a survey conducted at the University of Victoria (UVic) in 2009 revealed that 65% of new TAs had not engaged in any teaching preparation before beginning their duties (336 TAs responded, about half the TA population employed at UVic each fall and winter semester)[3] (Korpan, 2010). Reasons vary from scheduling issues, or research and work obligations that interfere with access to these resources for TAs, and the fact that departments do not always make the programs or workshops a mandatory requirement (Korpan, 2010). What this means is that most professors, departments, and TAs rely on an apprenticeship model as the dominant learning process to learn how to fulfill the duties, norms, and responsibilities of the TA work assignment. This model of learning, where a graduate student assists a course supervisor and the course supervisor is responsible for preparing and guiding the TA for his or her work, is termed an apprenticeship learning model.

If the existence of publications, programs, workshops, and the apprenticeship learning model indicate the necessity for TAs to be prepared before and during their teaching assignments, and since most TAs continue to be unprepared for their TA position, what can be done to resolve this issue? Articles and research continue to regurgitate the same approach to preparing TAs for teaching with a large majority based on trial and error rather than empirical research (Gorsuch, 2012; Hardré & Burris, 2012). The developmental shift that occurred late in the 1990s (Nyquist et al., 1999) resonated with educational developers in preparing future faculty but has had little impact on the actual preparation of TAs. This is because the apprenticeship model of learning is still the dominant form of teaching preparation used for TAs and course supervisors are not the audience for this literature. Is it time to change the apprenticeship model of learning, where a graduate student assists a course supervisor that currently dominates TA preparation? What further programming can educational developers and others provide to help prepare TAs for their work? What can be done to address the fragmented nature of TA work to make it a more coherent learning experience?

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[3] See Fagen & Wells (2004) for similar results from a national US survey.

From my perspective, the TA role has been conflated with the graduate student role. I question whether the apprenticeship model is the best method of learning for the TA role in Canadian universities. Currently, the apprenticeship model is still favoured at most institutions and not contested. For example, several publications focused on TA teaching preparation (Hattenhauer, 1982; Kost, 2008; Sullivan, 1991; Unger-Gallagher, 1991; Wilkening, 1991) state that the TA role should be seen as an apprenticeship to a faculty position. This negates the TA role as a stand-alone job, promotes the idea that faculty do not need to have preparation in order to teach, and that teaching is a compilation of skills attained in pieces as a TA.

Recently, universities are facing the pressing concern of ensuring high quality undergraduate educational experiences within an increasingly competitive post-secondary education context, making teaching preparation central to addressing the issue of how to best prepare TAs for their role. The way something is taught has consequences. In order to ensure that TAs are provided with the best learning process in how to perform the work assigned to them, it is necessary to question current practices. Towards that end, I critically analyze the apprenticeship model of learning to highlight its features, common problems, and issues. This is followed by looking specifically at the apprenticeship model of learning and TA work and the issues associated. Lastly, I ask how this critical look at how TAs are being prepared for their role can lead to innovative educational development for TAs.

## Apprenticeship model of learning

Apprenticeship, as a process of learning, is traditionally associated with trades and professions (Aldrich, 1991), but is also argued to be the *signature pedagogy*[4] of graduate education (Walker, Golde, Jones, Bueschel, & Hutchings, 2008). Accordingly, apprenticeship, as a process of learning, has received significant attention in recent years (Lave & Wenger, 1991; Pratt, 1998; Walker, Golde, Jones, Bueschel, & Hutchings, 2008). Apprenticeship learning is when a novice is assigned to a more experienced individual to learn how to perform a particular job. In traditional apprenticeships, the learning process is subjected to long-term modeling that eventually takes the novice to expert status. Analysis of the dominant features associated with apprenticeship (Ainley & Rainbird, 1991; Coy, 1989; Lave & Wenger, 1991; Pratt, 1998), reveals the following consistent themes in the apprenticeship model of learning: the importance of social relationships, both formal and informal; the process of learning, formally and informally; the importance of being physically in the role; the ascribed and perceived status of participants; and lastly, issues associated with this mode of learning. Moreover, this analysis shows that apprenticeship is a complex learning process divided into several phases: modeling, coaching, scaffolding, articulation and reflection, and promoting transfer of learning.

Through the mechanism of apprenticeship, the learner is provided opportunities to mimic and copy, and acquire fixed knowledge by one person through observation and transmission. Instructors rely on the instructional forms of describe and demonstrate

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[4] This term comes from L. Shulman (2005) and is described as "characteristic forms of teaching and learning…that organize the fundamental ways in which future practitioners are educated for their new professions" (p. 52).

that is primarily oral and dependent on learner memory. However, analysis of this model (Ainley & Rainbird, 1991; Coy, 1989; Lave & Wenger, 1991) reveals the *dominance* of a skill- and rule-based approach that simply mimics existing practices. Skill-based actions do not require a lot of subjective attention and are learned in order to maintain the norm of that skill. Rule-based actions are based on rules or procedures that can be easily adapted and revised as needed but only enough to maintain the rule. These actions are informed by the goal to *change and manage behaviour*. Underlying the apprenticeship model of learning on-the-job is the idea of training.

There are two important aspects of apprenticeship learning: first, that it is essential for all aspects of apprenticeship to be transparent and explicit, and secondly, that change and transformation will occur (Ainley & Rainbird, 1991; Coy, 1989; Lave & Wenger, 1991).

To address the first aspect of transparency, the learning process is dependent on the mentor making every aspect of the work explicit, either by doing and/or by talking out what he or she is doing and why. Similarly, Walker et al. (2008) argue that apprenticeship as a theory of learning is a set of relevant practices that demand committed participation by both mentors and graduate students. Apprenticeship pedagogy is neither faculty-centered nor student-centered, but rather about shared learning, knowledge, and ideas. Walker et al. (2008) recommend that principles of reading, talking, coursework, listening, presenting, writing, 'doing it', and guidance be included in the learning process for successful apprenticeship pedagogies. Apprenticeship has often been perceived as an informal learning situation (such as on-the-job), as compared to formal (in the classroom). Informal is when learning is not structured and lacks a clear program, like a degree program in formal education. To assist with making all aspects of the apprenticeship explicit, Fuller (2006) argues that successful apprenticeships need to have both formal education and on-the-job experience. Fuller (2006) backs up this claim by citing research that has shown that effective apprenticeships combine a structured period of off-the-job learning in formal education settings with on-the-job training and experience.

The second aspect addresses change and transformation of the apprentice and mentor, which happens in phases, is organized sequentially, and suitable to the responsibilities associated with the work. In its simplest form, there is the 'way in' and 'practice', going from low risk to higher risk responsibilities (Lave & Wenger, 1991) that represent development from novice to expert status.

No matter how the stages are divided, observation is typically regarded as the first important stage (Ainley & Rainbird, 1991; Coy, 1989; Lave & Wenger, 1991). In this initial phase, the mentor needs to model best practice. Lave and Wenger (1991) highlight the importance of observation occurring before actual practice. In subsequent phases, the learning process benefits from significant practice by the learner followed by feedback from the mentor, and reflection by the learner.

The different stages an apprentice goes through can also be based on the level of the apprentice's progress and the degree of social control (Coy, 1989). Social control of what the apprentice is doing begins high and gradually diminishes as the apprentice's skills and knowledge increase. In the first stage, Coy (1989) includes recruitment,

establishment of relationships, followed by decisions about how and when training will occur. Apprentices at this stage are often filled with anxiety and full of idealism associated with the position. In the second stage, as the apprentice begins to learn the work, jargon, argot (secret language), tools, values, and norms of the position, his or her identity begins to form and he or she begins to associate with the role. In the third and final stage, the apprentice has been fully exposed to the culture, has weathered stresses associated with the position, and begins to feel that they are ready to take on full responsibility of the job.

Another way to envision the phases of apprenticeship is to focus on mimesis followed by masquerade (Cohen, 1991). In the mimesis stage, the apprentice simulates and practices the scaled down parts associated with the job; whereas in masquerade, the apprentice aims to overcome the lack of knowing by trying out the role. However, through trying out, the apprentice does not yet fully occupy the role and is still in a phase of attempting to attain expert status.

Taking all of the different approaches and aspects together, the following diagram (Figure 1) illustrates the apprenticeship learning process:
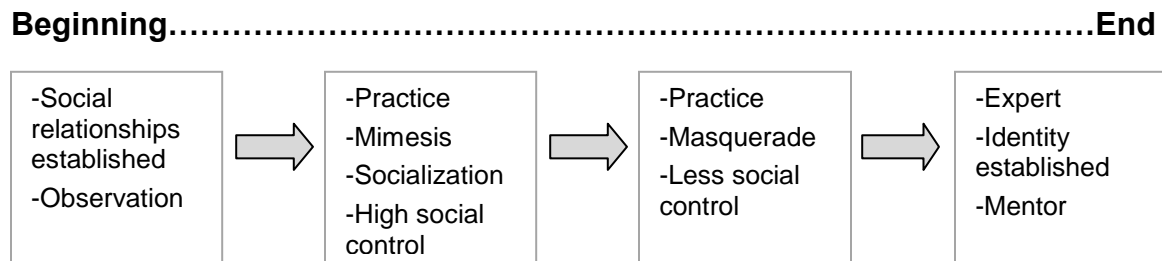
**Beginning………………………………………………………………………End**

| | | | |
|---|---|---|---|
| -Social relationships established<br>-Observation | -Practice<br>-Mimesis<br>-Socialization<br>-High social control | -Practice<br>-Masquerade<br>-Less social control | -Expert<br>-Identity established<br>-Mentor |

**Figure 1: Apprenticeship Process**

For the above learning process to be successful, it is dependent on the amount of support provided to the novice. Fuller and Unwin (2003) focused on how the apprenticeship process is approached through their research on apprenticeship work in companies in England. They found that there are two approaches: either expansive or restrictive. They determined that an expansive approach provides the apprentice with the most rewarding experience. In contrast, the restrictive approach hinders the development of the apprentice by inhibiting the learner's access to mentors, knowledge products, and opportunities to progress. The expansive approach includes clear learning goals, access to multiple mentors, is engaged in the work community, encouraged to practice in the broader community when ready, and that the process of learning is acknowledged through explicit recognition like certificates of achievement. Research conducted in the workplace confirms that an expansive approach (Fuller & Unwin, 2003) provides the necessary support system to ensure that apprentices have access to everything required to successfully learn on-the-job.

Besides being dependent on the amount of support provided for the novice, literature surrounding apprenticeship is lacking in two areas. Because apprenticeship typically focuses on a dyad created between a mentor and apprentice, and is seen as a one-way process where the mentor imparts knowledge to the apprentice, which negates acknowledgement of the peer-to-peer learning that takes place, and understanding of apprentices' perspectives of the learning situation.

Peer-to-peer interactions significantly contribute to informal and formal learning situations. A recent study conducted in a work environment confirmed that new employees valued peers more than any other mentor relationship while learning on-the-job; peers have more in common with the new learner because they have recently experienced the learning process (Cunningham & Hillier, 2013). Secondly, from the apprentices' point of view, what are the particular aspects of formal and informal relationships that enhance the learning process?

## TAs as apprentices

In Canada, TAs are typically assigned to a course and mentored by either the course supervisor, or some other supervisor associated with the course, such as a lab supervisor. In contrast to the traditional form of long-term apprenticeship, TAs are subjected to short-term assignments (typically one academic semester of about 16 weeks).

Sprague and Nyquist (1989) looked at TA professional development and emphasized that it is essential during the introduction to TA work that TAs receive support from the whole academic community, departmentally and centrally. Sprague and Nyquist (1989) determined that those responsible for preparing TAs for their work have three roles: as managers, as professional models, and as mentors. As managers, course supervisors need to plan appropriate supports for TAs, be visible and accessible by visiting tutorials and labs, keep TAs informed of pertinent information about the course, be collaborative and open to feedback, make expectations clear, and give regular feedback. As models of the profession, course supervisors should let TAs know the educational mission of the course, demonstrate good professional practice through student interactions and teaching, and articulate the complexities of teaching. Lastly, as mentors, course supervisors need to remind TAs that teaching is a developmental process and provide timely and clear feedback regarding TA duties and responsibilities. Despite Sprague and Nyquist's (1989) and other's efforts, as mentioned previously, the audience for these publications are educational developers and not the course supervisors responsible for preparing TAs.

Within the literature about how to improve TA teaching preparation, only a few studies have tried to augment the current apprenticeship model into a fuller experience by bringing in components essential to a successful apprenticeship model of learning. Working within a department specific example, Hattenhauer's (1982) experiment took place in a writing composition department where the TAs were required to complete a seminar about teaching before they were allowed to step into the classroom. As well, TAs met with faculty weekly to talk about pedagogical issues in the discipline. TAs commented that they were made to feel as equals to faculty, providing confidence that encouraged TAs to develop further as teachers.

Another study conducted over three years, from 2003 to 2006, looked at the effectiveness of an apprenticeship model to prepare graduate students to teach modern language courses (Kost, 2008). The model was well structured with all duties, tasks, and requirements stated. For example, at the beginning, TAs were required to observe the principal instructor during the class, making notes about the teaching methods used, content structure, the outline of the lesson, and any other details pertinent to teaching

the class. During the class, TAs would assist with any activities or planned group work. Prior to tutorials, TAs were required to submit to the instructor their lesson plans, quizzes, and handouts. The instructor would provide feedback and input before the TA conducted the tutorial. Each week, all TAs would meet to discuss what worked best and what challenges they faced in tutorial. Additionally, TAs were required to attend a professional development seminar. TAs dedicated time to reflect on the week, write any required reports, hold an office hour for students, and record in their teaching journal. As the course proceeded, TAs observed six different instructors within the department and provided a report about the observation. Instructors were required to observe each TA teaching and provide feedback. Through the implementation of this model, the study was able to confirm that graduate students gained significant confidence and experience as they began to learn how to teach in higher education. Other benefits included undergrads having less exposure to inexperienced instructors, and course supervisors who were able to reflect on the course and their own teaching through mentorship of the apprentice.

Another study about an apprenticeship model for TAs, focused on a scaffold approach to mentoring individuals new to teaching (Sutherland, 2009). The study found that the first stage—setting the tone of the apprenticeship experience—was the most important.

These studies illustrate success on a small scale using a fully developed apprenticeship model for TA teaching preparation but also reveal that to implement such programs requires a lot of structure and time on the part of course supervisors, which is idealistic and not realistic.

## Issues and problems

Whether realistic or not, several issues surround the use of the apprenticeship model of learning for TAs. Since the majority of TA mentorship takes place between a course supervisor and a TA or sometimes a team of TAs, common issues are discussed in the following order: from the course supervisor's perspective, then the TA's, and lastly, issues with apprenticeship and assumptions about teaching.

**Supervisors and the issue of mentorship.** In their survey of doctoral preparation, Golde and Dore (2001) found that supervisors of graduate students claim that a significant challenge to their workload today is to support the apprenticeship component of teaching assistantships. Supervisors do not have the time to mentor their graduate students in how to teach. This leaves the graduate student to attain mentorship about teaching during his or her short-term TA assignments with little or no support beyond those assignments.

Due to the nature of the TA assignment process, course supervisors are put in a difficult position. There are many reasons why this exists and is dependent upon variables associated with every TA assignment. How and when graduate students are assigned a TA position relies on different restrictions and processes that exist at every institution and within departments, but most will have very little time to prepare. As stated previously, up to 65% of TAs take up their TA assignment with no prior

preparation (Korpan, 2010) and strictly rely on course supervisors to prepare them for their TA work.

Following are some of the common issues that course supervisors are tasked to deal with:

1.  Typically, one course supervisor is responsible for preparing a student to be a TA (Long, Holberg, & Taylor, 1996), which is a time consuming task for the course supervisor.

2.  Most course supervisors cannot guide graduate students on how to teach except in a basic way – there is simply not enough time or resources to do so. Guidance on how to mentor TAs is often not available either from the department or from other campus resources. Therefore, most course supervisors rely on their own experience as a TA, which they admit was not always that good, or they admit that they were not able to provide what the TA needed due to lack of time or resources (Calkins & Kelley, 2005). Course supervisors will admit that the limitations they received in preparing to teach is what they pass on to those they mentor (Long, Holberg, & Taylor, 1996).

3.  Another problem is the inherent tacit (hard to articulate) nature of teaching (Lejeune, 2011). Some course supervisors may not have thought deeply about teaching and are unable to articulate why they do what they do and why it is successful (Hutchings, 1993). Lejeune (2011) defines tacit knowledge as "high-level awareness of 'how to act' that people develop over time and that they employ to solve practical problems at work and elsewhere" (p. 102). But tacit knowledge cannot be taught – it relies on being conveyed clearly by the course supervisor and the TA clearly receiving the knowledge. But the only way that tacit knowledge can be conveyed is through long term modeling, observation, questioning, and discussion about the work being done (Lejeune, 2011) by a critically reflective practitioner who has learned how to articulate and make explicit his or her tacit knowledge.

4.  Lastly, because of limited hours allotted to TA positions, course supervisors are not in a position to encourage TAs to invest time to learn how to teach (Hardré & Burris, 2012). This may also relate to how teaching is perceived in the department; there may be formal recognition that teaching is important but an informal message that sets it on the margins (Hardré & Burris, 2012).

Alongside these issues, there are different ways that course supervisors approach the task of mentoring TAs. Allen and Rueter (1990), through their work with TAs and course supervisors, concluded that the following types of interpersonal relationships exist: democratic, authoritarian, and libertarian (or permissive) professional styles. Course supervisors considered to be democratic, value and use the opinions and input of TAs, encourage open communication, and meet frequently with TAs to discuss problems and progress. Authoritarian course supervisors maintain strict control over the behaviour and responsibilities of TAs and appear dictatorial because of their strong convictions. Course supervisors who are highly permissive adopt a laissez-faire style of management and often seem removed from the supervision of TAs (Allen & Rueter, 1990).

**TA's perspective:** TAs are required to make a very rapid transition to professional practice, and are in a dual role of being a TA and learning how to teach in higher education. All of this exists in a highly pressured environment with heavy workloads. Data shows that graduate students are looking forward to holding a TA position but then do not receive enough support (Golde & Dore, 2001). The significant issues that exist for TAs compounds the problems associated with the apprenticeship model. These issues are:

1.  Since typically only one course supervisor is responsible for preparing a student to be a TA, this gives only one perspective on how to approach particular issues that surface during the term of an assignment (Long, Holberg, & Taylor, 1996). If a graduate student is assigned more than one TA position during his or her degree, he or she will be exposed to other perspectives, but the duties or issues that arise are not the same with each TA assignment. The TA is not exposed to critical engagement about the topic that would allow for the complexity of teaching to be recognized by the novice TA.

2.  The apprenticeship model does not naturally set up a community around teaching practice within the department, which has been identified as an essential element of good mentorship (Fuller & Unwin, 1991; Long, Holberg, & Taylor, 1996). In his analysis of the concept of expertise, Engestrom (2004) proves that expertise resides in many and not just one. This argument supports research conducted by the Carnegie Foundation that concludes that graduate students require mentorship from several individuals and not just one (Walker, Golde, Jones, Bueschel, & Hutchings, 2008).

3.  Due to time and resource constraints, TAs are not always encouraged to take an active role in their professional development. This socializes TAs to be passive and dependent on guidance from departments and supervisors (Long, Holberg, & Taylor, 1996). The perspective that teaching is a mechanical act that can be easily passed on works well for the passive approach encouraged and promotes the idea that opposition or questions are not required for such a mechanistic act. This view also keeps teaching separate from the domain of research and its intellectual perspective (Long, Holberg, & Taylor, 1996).

4.  Course supervisors may not encourage opposition or critical reflection on actions (Long, Holberg, & Taylor, 1996), again due to constraints, but this inhibits TAs' opportunities to learn and contribute to their professional development. This model does not promote conceptual or developmental change, or encourage reflective practice, all of which are essential for improving the practice of teaching (McAlpine & Weston, 2000).

Nyquist and Wulff (1996) conducted research on TAs' and RAs' work and found that they either tried to emulate their course or research supervisor's style or do the exact opposite. Unfortunately, this is a common response. Instead of taking a scholarly approach and questioning the methods and theoretical base of the teaching and learning observed, individuals default to mimicry (a feature of the apprenticeship model) or to doing something completely different without investigating which option is best. They default to what is easiest without considering why. This may be due to the rigid

differential in status and power between a course supervisor and TA (Long, Holberg, & Taylor, 1996). A TA is bound to work and learn from the course supervisor but limited in his or her ability to suggest different approaches to the work assigned. Of course exceptions exist, but the vast majority of TAs do not question the work they are assigned or the approach to that work. This differential in status and power negates reflective practice, an essential element of good teaching practice (Schön, 1987).

To support minimal preparation for TAs, an oft cited fallacy is the idea of observational learning (again a feature of the apprenticeship model; Cross, 1991), which assumes that TAs have been observing teaching for a long time and from observing, they have been learning how to teach well. There are several problems with this idea. First, is that TAs were not observing teaching; they were students learning. Maybe they were able to appreciate good teaching when experienced, but they certainly cannot articulate what made their learning take place. Observation alone has been shown to be an insufficient learning process (Cross, 1991). Mechanisms need to be in place to analyze the teaching observed, what worked, what failed, and why. One methodology that course supervisors will use to help TAs learn how to teach is to invite TAs into his or her class to observe him or her teach. Even if a TA is invited into a course supervisor's class to observe teaching and learn from it, appropriately sequenced questions and discussion about the course supervisor's pedagogy are necessary, before and after the observation, to provide the structure for learning.

There is the additional fallacy that TA work prepares a graduate student for future academic work. But, as a reproductive model, it continually reproduces TAs, not colleagues (Long, Holberg, & Taylor, 1996). The range of complexity that is involved in being an instructor in higher education is obscured. TA work is fragmented and does not represent the complexity of being the professor for a complete course. TA assignments provide experience to inform future work as a TA and will provide experience that the individual can draw upon if they choose an academic career, but TA work is not preparation for an academic career. Therefore, a course supervisor does not provide the best mentor for TAs in an apprenticeship model; it is not mentorship. Mentorship is typically an equal relationship among peers. Actually, an experienced TA provides the best mentor for TAs.

For the TA, there may be problems with the course supervisor through the aforementioned types of supervision (Allen & Rueter, 1990), which can result in restrictive access to professional development (Fuller & Unwin, 2003). TAs rely on their course supervisor to augment their skills (Dudley, 2009). Fuller and Unwin (2003) determined that restrictive apprenticeship models often prevent the learner from the following: being part of the community; gaining the knowledge required for the position; having no opportunity to talk and reflect with the mentor; being constrained for time so that the learner is fast-tracked and does not have time to learn all parts of the work; experiencing limited structure where competencies are not identified; having limited support and recognition from the institution; and having limited support materials related to learning the job (Fuller & Unwin, 2003). In any learning situation a synergy needs to be present that acknowledges the context of the work, the individual's capabilities, and competence to perform the work, or else the individual in the job position (in this case, the TA) will feel incompetent (Eraut, 1997).

Other issues pertaining to TAs' work performance can arise due to the lack of experience or knowledge about work expectations by the TA, based on the guidance provided by the course supervisor (Becker & Roberts, 2007). These issues are usually associated with misunderstandings, anxiety, lack of comprehension of course material or how to perform TA duties, lack of experience, and/or intimidation (Becker & Roberts, 2007; Bomotti, 1994). Specifically, examples include problems with grading, student and/or course supervisor interactions, improper professional conduct, misuse of time expected to complete TA duties, quality of work provided, not adhering to deadlines regarding TA work, or providing incorrect information to students regarding content or assignments (Becker & Roberts, 2007). Understandably, TAs state that the single most important factor that contributes to TA dissatisfaction with his or her teaching experience is the lack of support and guidance provided by the course supervisor (Bomotti, 1994). Maintaining supportive and successful interpersonal relationships is significant for TAs due to the impact it can have on the development of TAs' "self-esteem and professional identity" (Meyers, 1996, p. 755).

Besides the interpersonal issues between a course supervisor and TA, TAs identify an issue related to students. Students often perceive TAs as holding *expert* status (TAs, upon assuming the teaching role, often feel that they need to know the answer to everything about the subject being taught), as well as the infamous *imposter syndrome* (this refers to how any person may feel in a role that they believe they are not qualified to fulfill and they often feel that they are an imposter that at any moment could be revealed). Both perspectives are the cause of great anxiety for TAs (Nyquist, Abbott, Wulff, & Sprague, 1991).

All of the above relates, due to constraints on course supervisors and TAs, to several issues associated with the apprenticeship model of learning. Of greater concern is the use of this learning model for learning how to teach in higher education.

## Learning to teach

As has been discussed, underlying apprenticeship is an epistemology based on training; the learner being able to mimic and copy, and acquire knowledge through transmission and observation. This epistemology is based on the model of accumulating only what is needed to get the job done and is often unidirectional, determined solely by the course supervisor (Long, Holberg, & Taylor, 1996). Accordingly, 'training' has been sustained as the appropriate form of instruction for TAs, despite the proliferation of literature encouraging a shift to a more developmental approach (Nyquist et al., 1999). At the same time the recent professional development shift focuses more on graduate students as opposed to TAs, skirting the issue of the apprenticeship model used for TA learning. Arguments have been put forth though, pointing out how the apprenticeship model represents a narrow path of training, rather than professional development (Fitzgerald, 1992; Long, Holberg, & Taylor, 1996). Training is considered to be focused on the short-term, whereas professional development has more of a long-term focus (Fitzgerald, 1992). Training connotes things like potty or pet training (Hutchings, 1993) but teaching is much more complex and requires more than training. Training perpetuates the idea that teaching is a skill that is required through repetition and replication and is not about knowledge and reflection that leads to change (Beckett,

2001). Instead, teaching needs to be supported and perceived as about development, growth, and support (Hutchings, 1993).

The complex and dynamic nature of teaching has been acknowledged by many (Ball, 2000; Beckett, 2001; and Lambert, 1998, to name a few). Ball (2000) references Dewey as recognizing the tension that exists in the preparation of those who teach; the tension between theory and practice and how to integrate both so that the teacher's development benefits. Typically, teachers are left to do this in the context of their work; a very difficult task that does not happen easily and often not at all. This points to how Lambert (1998) calls teaching—a "thinking practice"; it is about "integrating reasoning and knowing with action" (p. 246).

Research that has looked at current apprenticeship models used in different work situations, conclude that strictly on-the-job experience is not sufficient and is more effective when formal instruction is part of the work experience and supported by supervisors that are specifically charged with helping the learner with his or her learning journey (Fuller, 2006). Hardré (2012) concurs and recognizes the need for "deep-level, long-term TA development" (p. 5) and the abolishment of short-term training to improve teaching quality.

The fact that TAs need development has been expressed by others (Nyquist & Sprague, 1998) and taken up by many educational developers who have thoughtfully created programs that provide that developmental support. The skills required by TAs cannot be learned in a simple training session; they have to take their experience and have opportunities to connect what happened with pedagogical theory to truly learn.

TAs are learning how to teach through holding a *teaching job* in a higher education institution, the *place of work*. I propose that it is time for other models of learning to be implemented for TAs.

One model that I am currently exploring is a workplace learning approach that has a lot of the same features of the apprenticeship model but provides a more holistic expanded approach to work and learning (Hager, 2011) and positions TAs as learners in the workplace, and not as graduate students apprenticing as future faculty. A workplace learning approach takes into account the institution, mentor(s), TAs, students, and the overall context of the learning situation during the work assignment.

For example, the interleaved process from workplace learning research is appropriate for TA work. Rather than focusing on one topic, the interleaved process involves exposure to abstract knowledge combined with exposure to situations to use the knowledge (Allix, 2011). In between the leaves of experience is exploration of concepts related to the experience. TAs are naturally positioned to engage in an interleaved process. In the TA work context, this would mean being exposed to relevant information necessary before embarking on the teaching assignment and followed by reflecting and deconstructing the experience in order to link to the concepts that connect to the experience. This process forefronts implicit learning and suggests that it should precede explicit or symbolic forms of learning; meaning that conceptual learning should be attached to an experiential structure rather than the other way around (Allix, 2011). My current research is laying the groundwork in order to implement a workplace learning approach by investigating the learning process that TAs undergo as they first

begin teaching (as the lead instructor in the classroom) in the academic workplace to determine how to best support TAs in their teaching role. Research in the field of workplace learning has shown that if the learning process for each role in the workplace is not understood, too many factors can undermine the process (Cosnefroy & Buhot, 2013; Eraut, 2007). Eraut (2007) states that in order to enhance learning in the workplace, it is essential that there is clear understanding of the range of ways that people learn in the job. Once this is determined, it is then possible to identify the learning needs in the context and attend to the "factors which enhance or hinder individual or group learning" (Eraut, 2007, p. 420).

## Conclusion

Is it time to change the dominant model of preparing TAs for their teaching responsibilities? Analysis of apprenticeship pedagogy undertaken here, clearly shows that the apprenticeship model of learning is not the best for TA learning and development. Due to several factors that affect course supervisors and TAs, compounded with issues with this form of pedagogy, it becomes apparent that a different approach needs to be developed. It is essential for ensuring quality undergraduate education and for teaching preparation for future academics. But how do you change a deeply embedded process? My hope is that by asking the hard questions and challenging embedded processes that we—all those involved in mentoring and preparing TAs and graduate students for their current and future teaching responsibilities—can implement significant change in order to enhance the quality of undergraduate education and TA and graduate student professional development support.

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