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Navigating the Tensions of Innovative Assessment and Pedagogy in Higher Education

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Abstract

Innovative practice in a classroom adds challenges and tensions to programs and institutional structures in higher education. With the recent emphasis on curricula reform, there is a great focus on assessment and pedagogical practices to support student learning. To illustrate the tensions arising from these efforts, we present four pedagogical and assessment innovation approaches using both Shulman's (2005) Signature Pedagogies and Tatar's (2007) Design Tensions frameworks. The four approaches include problem-based learning, game-based learning, case-based learning, and technology-enhanced learning. A narrative for each approach examines and addresses tensions using Shulman's (2005) surface, deep and implicit structures. We argue that there is an interconnected complexity and conflicting visions among the micro- (e.g., classroom or practicum), meso- (e.g., program), and macro- (e.g., institution) levels. We acknowledge that dynamic tensions continually exist and needs to be thoughtfully navigated in support of innovative assessment and pedagogies in higher education.

Dans l'enseignement supérieur, les pratiques innovatrices en salle de classe ajoutent des défis et des tensions aux programmes et aux structures institutionnelles. Suite à l'importance accrue récemment attachée à la réforme des programmes d'études, l'accent est mis sur l'évaluation et les pratiques pédagogiques pour soutenir l'apprentissage des étudiants. Afin d'illustrer les tensions qui découlent de ces efforts, nous présentons quatre approches de pédagogie et d'évaluation innovatrices qui font appel à la fois aux cadres de Shulman, *Signature Pedagogies* (2005), et à ceux de Tatar, *Design Tensions* (2007). Les quatre approches comprennent l'apprentissage par problèmes, l'apprentissage fondé sur le jeu, l'apprentissage basé sur des cas et l'apprentissage amélioré par les technologies. Chaque approche est examinée et traite des tensions qui en découlent en faisant appel aux structures de surface, profondes et implicites de Shulman (2005). Nous soutenons qu'il existe une complexité inter-connectée et des visions conflictuelles aux niveaux micro (par ex. en salle de classe ou durant les stages), meso (par ex. dans les programmes) et macro (par ex. au niveau de l'établissement). Nous reconnaissons que les tensions dynamiques existent de façon continue et doivent être soigneusement examinées pour soutenir l'évaluation et les pédagogies innovatrices dans l'enseignement supérieur.

In the 1980s, an assessment reform movement in higher education took place in North America. It was "stimulated by a combination of curriculum reform reports that called for greater curricular coherence, the use of powerful pedagogies known to be associated with high learning gains, and knowledge about student outcomes and experiences" (Ewell, 2009, p. 5). In the 1990s, Black and Wiliam's (1998) seminal work on formative assessment greatly influenced the use of assessment to improve student learning rather than solely to evaluate students summatively and to hold teachers accountable for students' test scores. Prior to Black and Wiliam, Boud and Falchikov (1989) suggested that student self-assessment, one of the key formative assessment strategies, be used to promote students' independence and lifelong learning in higher education. Both Yorke (2003) and Sadler (1989) advocated for using formative assessment to promote student learning in higher education. Assessment in higher education plays an important role in equipping students for lifelong learning, but many higher education institutions focus more on the certification of student achievement rather than to support student learning (Boud & Falchikov, 2006). Hence, it is essential for instructors in higher education to consider aligning course objectives to students' long-term goals.

Current assessment trends include assessment for learning, assessment for progress monitoring, and assessment of students' 21st century competencies (e.g., critical thinking, creativity and innovation, and problem-solving), which have become increasingly important in the globalized workplaces (Partnership for 21st Century Skills, 2002). There are competing goals related to the assessment movement, which can make it challenging to implement an innovative pedagogical approach successfully. On one hand, it is important to assess student learning and mastery of 21st century competencies (i.e., assessment for learning); on the other hand, faculty also have an obligation to ensure and prove that graduates are competent professionals (i.e., assessment for accountability). Instructors in a postsecondary setting, especially those who teach in a Faculty of Education, are tasked to set exemplary standards for assessment practice both for learning and accountability.

In this article, we discuss our pursuit for innovative pedagogical and assessment practices at the undergraduate and graduate program levels in a higher education institution. Specifically, we present our reflective accounts on navigating varying expectations of students and the institution. As teacher educators and researchers, we purposefully decided to reflect on our own experience of dealing with these tensions. By using a reflective approach, we have opted not to use the details from student data in this article. While using Shulman's (2005) signature pedagogies as a design framework to address multiple goals of higher education teaching and learning, we also encountered what Tatar (2007) called design tensions on multiple levels. The tensions between existing values/practices and envisioned ones arise when putting learning theory into practice creates unexpected situations and dilemmas (Tatar, 2007). Adopting Tatar's framework, we identified the tensions embedded within the surface, deep, and implicit structures of signature Pedagogies we designed and implemented. Based on four examples, we examine possible solutions to address these tensions within the micro- (e.g., classroom or practicum), meso- (e.g., program), and macro- (e.g., institution) levels.

Signature Pedagogies

Concerned about providing meaningful learning experiences, many instructors in higher education have taken up what Shulman (2005) advocates as signature pedagogies for preparing future practitioners in their disciplinary practices such as law (Sullivan, Colby, Wegner, Bond, &

Shulman, 2007), medicine (Cooke, Irby, & O'Brien, 2010), academic research (Walker, Golde, Jones, Bueschel, & Hutchings 2009), and liberal arts (Chick, Haynie, & Gurung, 2012). Recently, the use of signatures pedagogies has moved beyond the professional disciplines. Chick et al. (2012) noted that signature pedagogies are being used in social and natural sciences, fine arts, humanities, as well as in interdisciplinary areas. Signature pedagogies "are types of teaching that organize the fundamental ways in which future practitioners are educated for their new professions" (Shulman, 2005, p. 52). Through this process, future practitioners learn to think like professionals, develop a deep understanding of the knowledge of the field, and have a commitment to the standards of practice for the profession (Bernstein, 2012; Chick, et al., 2012). Within a discipline, novices become proficient in "critical aspects of the three fundamental dimensions of professional work – to *think*, to *perform*, and *to act with integrity*" (Shulman, 2005, p. 52). To proficiently meet these three dimensions, the graduate of professional programs is required to learn and to understand not only the theory but also to apply this knowledge in practice (Shulman, 2005).

There are three structures to a signature pedagogy. First, the *surface structure* involves the instructor controlling the pace and facilitating the dialogue. It includes directed teaching practices such as questioning, showing, and sharing, along with demonstrating (Shulman, 2005). Second, the *deep structure* rests on a "set of assumptions about how best to impart a certain body of knowledge and know-how" (Shulman, 2005, p. 55). Through various instructional strategies and assessment tasks, the novice learns how to think like a member of the discipline. This involves strategies (e.g., guided case studies) to develop professional practice (e.g., clinical reasoning for school psychologist). Third, the *implicit structure* engages a moral and ethical standard (Shulman, 2005). It is within this structure that teachers examine, critique, and apply their discipline's ethical standards in practice. With a signature pedagogy, striking a balance between the technical, intellectual, and moral dimensions is imperative in providing a holistic learning experience. In the teaching profession, for example, a teacher needs to have both content and pedagogical knowledge and skills to teach the subject matter. It also requires the teacher to learn, apply, and adhere to the standards of the professional code of conduct when working as a teacher.

In a School of Education responsible for preparing both undergraduates and graduates for professions in education, there are types of teaching that are reflective of the education discipline. Our school identified the following signature pedagogies as relevant in preparing students for the profession: inquiry-based learning, case-based learning, problem-based learning, community-based learning, place-based learning, and cognitive apprenticeship (Faculty of Education, 2011-2016). In this article, we utilized problem-based and case-based learning from the identified signature pedagogies, along with emerging signature pedagogies of game-based learning and technology-enhanced learning for our discussion of innovative assessment practice and the accompanying tensions between the micro-, meso-, and macro-levels.

Methodological Approach

We took a reflective approach to examine our respective signature pedagogies in the courses we designed and taught. Our approach resembles a reflective case study (Maclellan, 2008) as we created an analytic framework to reflectively examine our existing data. On the other hand, we focused more on each instructor's reflective account on what happened in the process based on students' artifacts and other forms of data collected as part of our own research agendas. We reviewed data taken from our own studies' data collection and teaching experiences and reflected on the information using Shulman's (2005) and Tatar's (2007) frameworks. Our reflections were

based on multiple sources of data (e.g., digital artifacts, student assignments) drawn from our respective courses.

We have selected four pedagogical approaches used in our school's undergraduate and graduate programs. Each author of this article examined how they designed and implemented learning with a selected approach for their students. We chose the construct of "tension" as a productive tool to understand where our design and implementation challenges for innovations exist in our practices. In our reflective accounts, we position existing tensions as needing to be surfaced and addressed on multiple levels and providing opportunities to transform teaching and learning practices.

We examined the tensions caused by attempting to incorporate innovative instructional and assessment practices through both Shulman's (2005) signature pedagogies and Tatar's (2007) design tensions frameworks. With each pedagogical approach, we analyzed the tensions from the perspective of designers and instructors of innovative pedagogies and assessments. Tatar (2007) described four design-related tensions: (a) vision (current vs. envisioned values), (b) approach (implications of a new approach), (c) project tensions (how to operationalize a concept of an approach), and (d) as created scenario (unexpected situations and dilemmas). These tensions exist within the context of teaching and learning situations. In Table 1, we outline four design tensions within the three structures of signature pedagogies (surface, deep, and implicit structures).

Table 1
Design Tensions of Signature Pedagogies

Signature Pedagogies	Design Tensions			
	Vision	Approach	Project Tensions	As Created Scenario
Surface Structure	"is" vs. "ought" of higher education teaching and learning	What is the innovation and what drives it?	Influence on the acts of teaching and learning (e.g., detailed vs. loose assessment criteria)	Consequences of the change in operational acts
Deep Structure	"is" vs. "ought" of how adults learn	How does this innovation approach learning?	Conflicts of the assumptions (e.g., clarity of expectations vs. student's setting their own goals)	Situations arise due to the conflicting assumptions on how higher education students learn and are assessed

Signature Pedagogies	Design Tensions			
	Vision	Approach	Project Tensions	As Created Scenario
Implicit Structure	"is" vs. "ought" of beliefs on the profession	What does this innovation imply about the future professions of the learners?	Conflicts of values (e.g., teachers know what is best for learners vs. learners should discover what suit them)	Dilemmas on what helps learners and what facilitate teaching (e.g., assessing students in large lectures with MCQ may not help them understand the implicit structure)

Now more than ever, external drivers, such as accountability for innovation in education, influence educational practices. Both intrinsic and extrinsic motivators add to the tensions of pedagogical change that impact classroom, program and institutional levels. The constraints of innovative assessments and pedagogies in higher education teaching and learning have been discussed for decades. Eraut (1975) examined how it is difficult to see the need for innovation when there is no apparent dissatisfaction with the current practice. In fact, the motivation for innovation often starts with instructors' vision for teaching and learning and their dissatisfaction with current practice; the institutions' and students' motivations are often secondary. In our four pedagogical approaches, we, as instructors, have taken risks and worked within these constraints, recognizing the tensions along the way. With the surface structure, for example, there is a vision of the ivory tower imparting newly discovered knowledge, as opposed to the vision of engaging young adults in creating knowledge. Both visions can exist and be reflected in different innovative assessment and pedagogical practices in a course and might be necessary considering today's knowledge-based society. On the other hand, instructors also need to recognize the tensions that arise between these approaches and find a balance that prepares students for the field. With the deep structure, there could be competing visions of how young adults learn best (e.g., independently or collaboratively). As a result, many instructors have made efforts to balance individual and group assignments, and some institutions even put forward the guidelines (e.g., maximum percentage of grades by group work) to address such tensions. With the implicit structure, each instructor may have a different vision for professional dispositions (e.g., standardized view on professionalism in a discipline versus creative perspectives on a profession). The amount of experience instructors have in the field impacts their perceptions of professionalism and professional actions.

Identifying Tensions in Implementing Signature Pedagogies

Each pedagogical approach in this section provides a situational dilemma that illustrates the tensions that arise when instructors design and implement innovative assessment and pedagogical practices to enhance teaching and learning. We start by describing the context of each approach and then discuss the tensions that arose with the surface, deep, and implicit structures (Shulman, 2005). Each author is reporting one signature pedagogy used within her instructional context. The following four signature pedagogies were used in four different higher educational

contexts to improve teaching and learning: (a) problem-based learning, (b) game-based learning, (c) case-based learning, and (d) technology-enhanced learning. Ethics approval was received to conduct the studies for the first three approaches from the University's Conjoint Faculties Research Ethics Board. The fourth approach was a document analysis which did not require ethics approval. We summarized our data sources from each of the studies in the Appendix.

A Problem-based Learning Approach

The problem-based learning (PBL) approach prepares undergraduate students for their future teaching professions including content and assessment practices. PBL is a pedagogical approach that utilizes a problem to initiate, focus, and motivate student learning. In most PBL classrooms, students are given a problem, which they have to define and solve with their peers in small groups. Students also engage in self-directed learning (e.g., search for additional resources) outside the classroom (Barrows & Tamblyn, 1980). PBL is a powerful pedagogical approach to develop preservice teachers' assessment literacy in three fundamental ways: intellectual, technical, and moral. At the intellectual level, preservice teachers need to intellectually engage in discourse about sound assessment practices. The technical aspect of assessment literacy involves teachers' design and implementation of sound assessments, while the moral aspect refers to their beliefs about the use of classroom assessment to improve teaching and learning.

In the context of this pedagogical approach, an assessment course was redesigned using PBL to develop the assessment literacy of preservice teachers. Due to large class size and other structural constraints, the content of the course was originally delivered using a traditional didactic lecture approach, which resulted in a misalignment between the intended curriculum, assessment, and pedagogy (Biggs, 1996). Using PBL, five problems were created to address current trends, issues, and debates in educational assessment. They included assessment balance, assessment for learning, developing high-quality assessment tasks, designing high-quality rubrics, and grading and reporting practices (Koh, 2014). Approximately 350 preservice teachers completed the assessment course. Preservice teachers worked in small groups and instructors served as facilitators using PBL as a signature pedagogy.

Surface structure. The original intention of the assessment course was to use a learner-centered, PBL approach to facilitate preservice teachers' learning of assessment knowledge and skills. The course was taught by twelve instructors, including the course designer, who had various degrees of expertise in assessment and PBL. Therefore, some instructors might have reverted to a traditional didactic pedagogical approach due to their lack of PBL experience or due to practical constraints (e.g., instructional time restrictions, class size). This is especially true when the learning goals (e.g., knowledge of the purposes and functions of different types of assessment) are misinterpreted. Given that the five different problems, learning tasks, guidelines, and assessment rubrics were well structured, some preservice teachers went through the content and assignments by rote learning. Others wanted to be told what to do by their instructors so that they could complete all assignments in an intensive semester.

Deep structure. To enable preservice teachers to be assessment literate, their understanding of the contemporary assessment issues such as a balance between formative assessment (assessment for learning) and summative assessment (assessment of learning) at classroom, school, provincial/state, and national levels is essential. It is important for them to grasp the nuances of assessment for learning, authentic assessment, and performance assessment as these terminologies and practices have been used loosely. Preservice teachers in the course are also

expected to learn how to be critical thinkers about the quality of existing performance assessments and rubrics. Not all performance assessments are authentic assessments (e.g., King & Kitchener, 1994; Koh, 2011; Wiggins, 1989). For example, a writing test is a performance assessment, but it does not necessarily require students to make real-world connections if it is not designed to do so. In contrast, writing an article to a newspaper editor has a high degree of authenticity because students need to select the right genre and use language in solving real-world problems.

One major learning task for this course was for preservice teachers to critique a performance assessment they have seen or used during a practicum and to create solutions to improve the quality of that assessment. To determine the authenticity of a performance assessment, the preservice teachers were asked to use the criteria for authentic intellectual quality (Koh, 2011; Koh & Luke, 2009; Newmann & Associates, 1996). However, the structured guidelines for the learning task might have created a tension between the spirit of PBL and supporting students' completion of the required work. Ideally, the learning task ought to represent messy and ill-structured problems so that preservice teachers have a greater opportunity to develop their critical thinking through creative solutions to the problem (King & Kitchener, 1994; Koh, 2017; Koh, Tan, & Ng, 2012).

Implicit structure. The implicit structure of using PBL in facilitating the assessment course is to promote preservice teachers' professional attitudes, values, and dispositions. Since the inception of the Framework for Student Learning (Partnership for 21st Century Learning, 2002), the development of dispositions or "soft skills" such as self-directed learning, lifelong learning, perseverance, and risk-taking have become increasingly important in the curriculum frameworks in education systems. It is imperative that prospective teachers are given opportunities to develop their professional dispositions. This will enable them to use assessments to create opportunities for K-12 students to develop desired learner dispositions or soft skills. Some preservice teachers reported that PBL helped them to develop their self-directed learning skills as they were required to search for more resources and to think about possible solutions prior to working with their peers in small groups.

A Game-based Learning Approach

This pedagogical approach focused on transforming the culture of graduate learning through the design of a course on game-based learning. In considering game-based learning, we question what counts as disciplinary and authentic practices in the context of inservice and preservice teacher education and argue that participating in gameful activities and assessments creates a playful culture of learning. Gameful learning emphasizes goal-driven efforts to understand the rules or constraints and co-operate with other players to overcome obstacles as well as to negotiate their identities while achieving goals (Holden et al., 2014; McGonigal, 2011). An important and authentic practice in teacher education should include playful and gameful aspects of learning: teachers' practices involve young people who are apt learners in their social worlds, invent new ways of doing things, and examine their own practices, including their game play (Lankshear & Knobel, 2011; Thomas & Brown, 2011). Some instructors incorporated game principles into the course activities and assessments and found their efforts motivational for students (Fishman & Aguilar, 2012; Sheldon, 2011, 2013).

The course incorporated game mechanics to engage graduate students in Education in the concepts and practices of game-based learning. Students gained experience points (XPs) for course activities, and their learning tasks were positioned as multiple battles (Johnson et al., 2014;

Sheldon, 2011). Other gameful elements included creating avatars for anonymity, self-scoring XPs for leaderboard, and giving and receiving immediate feedback on their XPs. Transforming the culture of learning was essential in experiencing playful learning through this approach. In operationalizing the concept of game-based learning, there were multiple levels of tensions in designing and implementing the innovation.

Surface structure. First, the university grading scheme and requirements were reconsidered with game mechanisms of scoring. This involved figuring out which parts of the activities could become small and recurring tasks, which students could fail and repeat without detrimental consequences of their course performance, like games. Second, there were apparent tensions between game-like activities and the graduate-level scholarly readings. For gamers and their communities, there is a voluntary exchange of user-created information to deepen their gameplay. It is the opposite in this course, as engaging in game-like activities was "required" to deepen their scholarly understanding of how people learn through play and games. Third, a common feature of social gaming is a leaderboard. In an earlier iteration of the course, students expressed discomfort with using leaderboard since XPs would have eventually translated into student grades (Kim, 2014). To mitigate this tension, we adopted another common feature of games, which was creating avatars for online activities, XPs, and leaderboard. This change created a new tension/dilemma as well as interesting interactions. Students made efforts to dissociate the opinions they expressed online from what they discussed in the classroom, in order not to expose their avatars. At the same time, students engaged with the course differently as avatars (e.g., paying attention to each other's personalities and opinions to figure out avatars, bonding among group members as they often find out each other's avatars early on).

Deep structure. Our assumption was that people learn by playing games (Gee, 2008), and, therefore, graduate students in education should have an opportunity to experience how gaming could be a process of learning. On the other hand, tensions arose when considering assumptions about the scholarly engagement of graduate learners. We expected them to read, reflect on, and write about theories of teaching and learning, which is very different from playing games. Paradoxically, games commonly differ from the constructivist ethos of students' setting their own goals. It is because games, in general, are composed of prescribed rules, goals, and states of winning. As such, students and the instructor had to engage in on-going negotiations about the goals and rules of the course. For example, even though the micro-blogging was intended for playful engagement with their on-going design ideas and gaming experience, students expected a more detailed set of rules (e.g., a word limit). In terms of exploring how a game structure was intermingled with the learning process, there was a difference between advocates and non-advocates of game-based learning among the students. Those who were skeptical about using games for learning contributed to critical perspectives on this approach as well as games they played (e.g., educational games introduced may not clearly connect with their teaching). These tensions existed throughout the course based on the assumptions the course participants, the instructor, and a common game structure had about how people learn and progress.

Implicit structure. The implicit structure of using a game-based learning approach was to promote graduate students' professional attitudes, values, and dispositions of embodied learning principles of any game. This innovation also promoted transforming teacher-student relationship as co-creators of learning designs and co-players of games. However, promoting a gameful learning disposition might conflict with supporting a co-learning disposition. Gamefulness requires an attitude of accepting new rules and constraints of rule-based gaming (Holden et al., 2014), which often specifies the value of player actions (i.e., allocated points). The co-learner

disposition of a teacher and students, on the other hand, would challenge those constraints and create the rules together. In this course, which attempted to achieve both ends, the main dilemma came from implementing XPs. The course structure inevitably better supported learners who had gameful dispositions (i.e., those who expressed that they were open to experimenting with new rules). Consequently, students with gameful dispositions performed well during the course (i.e., challenged themselves for better XPs) and provided meaningful suggestions for future iterations of the course, while students with less gameful dispositions (i.e., who expressed that they do not support game-based approach in general) had difficulty in working with the new rules and kept their reservations on game-based learning.

Playing games and challenging game designs require 21st century competencies including critical thinking, complex problem-solving, and ICT literacy. Many digitally-literate youths develop these competencies in their social interactions outside of classrooms, often leaving teachers ignorant of what game-based strategies students might bring into the classroom. Considering that the cultures of learning in Schools of Education go beyond the realm of workplace, we need to consider such emerging culture of young people with whom teachers will work. This pedagogical approach provided opportunities for inservice teachers to experience a different social structure (i.e., gaming) that challenged their existing academic and professional dispositions and to find their own ways to act on its new rules (James, 2013). The tensions that both instructors and students experienced while designing and implementing such innovations became opportunities for transforming the culture of learning (e.g., using avatars to mitigate tensions giving them other opportunities to be playful).

A Case-based Learning Approach

Graduate programs in school psychology tend to adopt a practitioner-scholar model, which has a strong foundation of scientific research to inform practice rather than a scientist model, focused primarily on research (Leigh et al., 2007). School psychology programs train students for the practice of school psychology, preparing them to be critical consumers and disseminators of research. While the term practitioner-scholar originated in the field of psychology, use of the term is expanding to other fields including education. As such, assessment of skill-based competencies in training programs should provide scaffolding and assessments that provide a supported environment to gain the skills necessary to ensure practitioner competency before entering the field (Leigh et al., 2007).

The challenge of assessing competency of clinical skills is evident across practitioner-based training programs for educational professionals. Areas of challenge include translating knowledge to practice, the differences between theory and practitioner skills, effectively translating research knowledge into practice (Knight, Turner, & Dekkers, 2013), and the complexity of working in schools with actual teachers and students compared with classroom-based graduate-school learning (Lee & Fortune, 2013). This pattern continues into inservice professional development, which historically increases knowledge but does not change professional practice. The practitioner-scholar model of training, however, focuses on preparing students to enter the field as practitioners. It equips them with the tools to critically consume research in order translate research for other personnel in their schools and to effectively apply it to their practice (Korman, 1976).

Current assessment methods are ineffective at targeting the integration of knowledge, skills, and attitudes. Additionally, trainers often provide limited feedback to students, especially

concerning skills and attitudes that have an element of subjectivity because trainers do not want to discourage students, or they want to avoid potential conflict (Lichtenberg et al., 2007). Applying micro skills during coursework through case study and situated, problem-based learning provides potential opportunities to practice applying skills and to observe peers practice skills (Kindsvatter & Desmond, 2013).

We used a case study to examine the use of case studies to teach and assess clinical reasoning skills in doctoral students (n = 3; class size = 3) enrolled in a school-based practicum course. Students completed a case conceptualization worksheet to document their clinical reasoning process and growth, both at the beginning and the end of the course. These worksheets were analyzed for logical flow, confidence and accuracy of diagnostic decisions, and thinking errors, which include cognitive biases and misapplied heuristics, which can interfere with clinical reasoning (Wilcox & Schroeder, 2015). Students also participated in a semi-structured interview to clarify their thinking. Finally, the instructor completed a reflective log of instructional practices related to the instructional case studies.

Surface structure. The fact that using case studies to formally teach and assess clinical reasoning skills to school psychology graduate students is innovative highlights tension in the pedagogy of training school psychologists as case-based learning is used in other fields (Baeten, Dochy, & Struyven, 2013; Pelaccia, Tardif, Triby, & Charlin, 2011). Programs already value teaching applied skills as evidenced by the focus on proficiency in test administration and the investment in supervised practice during practica and internships. Instruction related to clinical reasoning tends to focus on content knowledge rather than learning the skill of thinking like a psychologist. As a result, school psychology students have a strong knowledge base about assessment and diagnosis related to the challenges that school-aged students face. However, they have experienced little supported practice in thinking through the process of case conceptualizations using clinical reasoning before they are expected to apply those skills in real-life situations during their practica.

Deep structure. Psychology training programs' investment in practica and internship experiences exemplifies the underlying belief that students move into the role of practitioner through apprenticeship experiences. At the same time, our investment in students' clinical reasoning skill development to prepare them for apprenticeship experiences is uneven (Wilcox & Schroeder, 2015). There is a tension between how we support students in applying their content knowledge about assessment and diagnosis and how we support them in acquiring the clinical reasoning skills necessary to conceptualize cases. Graduate students need clinical reasoning skills to make accurate diagnostic decisions that inform recommendations, which in turn improves academic and well-being outcomes for school-aged students.

Implicit structure. Our underlying belief about the profession of school psychology, as well as other educational professions, in that a strong knowledge base, proficient skills, and effective relational skills are all necessary for impactful practice. During the process of implementing case study as a vehicle for learning how to think like a psychologist by using clinical reasoning, and then assessing that reasoning process, we identified some challenges. Students struggled with the shift from simply identifying a diagnosis to conceptualizing the case to understand the factors underlying the presenting challenges. They especially found it difficult to use a structured tool to organize the data, preferring to use a more free-flowing approach despite the fact that they were less likely to thoroughly consider all information using this approach. To make meaningful recommendations that will inform necessary instructional changes, school psychology graduate students need to see the whole picture through case conceptualization.

Providing meaningful assessment of competency in the applied skills for school psychology students is significant due to the impact that application of these skills has on teachers and the school-aged students our graduates serve. Implementing evidence-based practices and translating research concerning evidence-based practices for other school personnel is an essential component of the professional services school psychologists provide. As trainers, we should model best practices in assessment by clearly linking outcomes with learning opportunities and assessment. Unfortunately, some academics have limited applied experience, which may impact their comfort in assessing practice-based competencies. The requirement to move beyond diagnosis is a challenging shift in thinking for many students as they move from knowing diagnostic criteria to applying clinical reasoning skills to better understand client functioning.

A Technology-Enhanced Learning Approach

Teaching *with* technology is not necessarily easy to implement or to assess. The Technological Pedagogical Content Knowledge (TPACK) framework (Koehler & Mishra, 2007) provides an approach regarding the type of knowledge "evident in teachers' practice when they transform their own understanding of subject matter into instruction in which technology and pedagogies support students' understanding and knowledge creation" (Kinuthia, Brantley-Dia, & Clarke, 2010, p. 647). Effective technology integration involves the nexus of the three interdependent knowledge areas: content knowledge, pedagogical knowledge, and technological knowledge. The emphasis of the TPACK framework provides teachers with a means of bringing together the three knowledge areas and for teachers to demonstrate how the interactions influence discipline-based teaching within technology-enhanced learning environments (Harris, Mishra, & Koehler, 2009).

The implementation of signature pedagogies lives in the pedagogical knowledge. It is in this space that the instructor determines what pedagogies will be used to support student learning. It is also here, that students engage in completing learning tasks through the signature pedagogy where they bring together both the content knowledge and technological knowledge. The richness of the learning within technology-enhanced learning environments comes with the interaction of all three knowledge areas. The challenge lies in how well instructors scaffold student learning when using technology. As noted by Redmond and Lock (2013), instructors in teacher education programs often view themselves as content and/or pedagogical experts. While there may be some who have the content, pedagogical, and technological expertise required for designing and facilitating learning in technology-enhanced learning environments, they are in the minority. In teacher education programs, "TPACK provides a framework to unpack and repack the parts and the whole so to design and facilitate meaningful learning and teaching with technology" (Redmond & Lock, 2013, p. 108). This requires instructors to have the knowledge and skills to not only teach the content with technology but also to support student learning with technology.

Within courses, students are called upon to create digital products. However, they may not understand what makes for quality work or how to assess the quality of their digital creations. Ohler (2013) argued that there is a need for new media assessment with regard to student learning. Educators need to "guide how and what they learn" (p. 86) as part of learning with digital technology. Instructors need to develop appropriate criteria and to engage in conversation with students about *how* and *why* to integrate technology in support of teaching and learning.

Within the Bachelor of Education program, there is an expectation that various signature pedagogies are to be implemented (e.g., inquiry-based learning, problem-based learning, project-

based learning) within technology-enabled learning environments. As part of learning through selected pedagogies, students may create digital artifacts (e.g., web pages, videos). The context of this pedagogical approach is focused on examining the nature and degree of the alignment between course outcomes, the expectation of the learning task, and the assessment of student-created digital artifacts. This study focused on courses offered over one year that required students to complete digital artifacts. A curriculum mapping process was used to assess the alignment between course outcomes, the learning task, and the assessment used when students were asked to create a digital artifact. Specific attention was given to the assessment criteria to see if it mapped to the outcomes and what was being assessed in the work.

Surface structure. From the analysis of the curriculum mapping process used to assess the alignment, it was evident that the learning outcomes focused on content knowledge and that students were expected to demonstrate a particular understanding of specific discipline content knowledge. Yet, assignments often required students to present or represent knowledge using various multimedia and multimodal approaches, with limited to no attention to principles guiding the creation of digital artifacts. Further, what was apparent from the analysis was the misalignment between the learning outcomes, the assignment expectations, and how the digital assignment was assessed. Quality of the digital work may not be adequately addressed unless there were discerning elements of *why* and *how* the technology is being used to support learning. For example, students were expected to create poster presentations in two courses. However, the learning outcomes for the courses focused on content knowledge, yet, the assessment included both content and visual design criteria. Assessment criteria included such things as aesthetics and using graphics to support content. With no learning outcome related to the artifact design, the focus of the work was on content, which tends to result in students developing limited knowledge and skills in designing visual presentations.

Deep structure. For students to demonstrate understanding of specific content knowledge, they need to have a sound understanding of the media being used and principles of design using the selected media. Attention needs to be given to how the audio, video, and imagery work together in conveying a message. However, when instructors do not have this knowledge and/or skill set and if there is a lack of instruction in support for such an assignment, it leads to misalignment. Often the assessment criteria do not take into consideration how the media is used in the messaging of student learning. As students experience this in their teacher education program, this then trickles down to how they teach and assess when they are in the K-12 classroom.

Implicit structure. There is a need to shift from technology used at a surface level to a greater pedagogically informed practice. This shift requires the valuing of teaching and learning *with* technology. The emphasis of TPACK is on the instructor's understanding of the interconnection of the three knowledge areas (Harris et al., 2009). As part of learning in technology-enabled environments, instructors need to be encouraged to engage students in conversation about *how* and *why* to integrate technology in meaningful ways to support learning outcomes. As instructors and students integrate technology into their practice, they also need to think about the social, moral, and ethical issues present when using digital technologies. Issues of copyright, citing sources, plagiarism, and cyberbullying need to be taken up in authentic discussions and guided actions that lead to strategies to foster digital citizenship. Through such conversations, along with facilitated learning experiences, students must have opportunities to develop deeper understandings of not only integration of technology in teaching and learning, but also the moral and ethical factors that influence the quality and integrity of the digital work. It is more than just using technology for completing an assignment. It is understanding the complexity

and the moral responsibility when using technology *in* learning. As such, where within the assessment practices and learning outcomes associated with digital artifacts are students being immersed in critically thinking about their decisions and responsible actions in relation to the use of digital technology?

Instructors are being asked to have students create using new media, yet they may not have the necessary expertise in TPACK. Further, if we ask students to engage in meaningful learning through the performance of creating using digital media, then we should intentionally align what is to be achieved (learning outcome), how it will be achieved (pedagogical and technological knowledge), and how it will be assessed. According to Jonassen, Howland, Moore, and Marra (2003) "the performance of the learning task and the assessment tasks are interwoven and inseparable" (p. 228). It is in this interwoven space that attention needs to be given to establish greater alignment.

Addressing the Tensions at all Three Levels

An innovation takes time to take effect (Raudenbush, 2007). In our implementation of these pedagogical approaches, the tensions at the micro- (classroom or practicum), meso- (program), and macro- (institutional) levels were intricately interconnected and complex. It is difficult to speak of both the successes and the challenges that occur at one level without acknowledging their impact on the other two levels. At the same time, we need to examine and recognize the influences from the two other levels.

What restricted the work at the micro- or instructor level was tied to policies and/or practices at the faculty and institutional levels. It is not a matter of untangling the tensions at each level but of addressing the tensions through thoughtful alignment and innovation among the levels. It is important to consider the institutional, instructor, and student values of quality teaching in contemporary learning environments (Findlow, 2008). Oftentimes, instructors are hesitant to try out new pedagogical or assessment approaches due to the pressures of accountability demands such as student evaluation of teaching and annual performance appraisal. Higher education institutions need to create new ways of acknowledging course coordinators and instructors who spend a considerable amount of time outside of the instructional hours to plan, develop, and lead educational innovation.

At the micro-level, or the classroom or practicum level, the tensions during the implementation can also be reduced by making the purpose of a pedagogical or assessment innovation more explicit with students. This enables students to engage in meaningful dialogues with the instructor, as their voices are taken into consideration in any educational innovations. This sense of ownership and belonging contributes to creating a supportive learning environment. Gaining a better understanding of a new approach help students embrace ambiguity and messiness while working toward the completion of their assignments. The painstaking process of learning, unlearning, and relearning (e.g., rethinking a course as a game in game-based learning approach) should be positioned as opportunities for them to expand their experience and improve their knowledge and skills. Students often realize the importance of what they are learning outside of the course context.

At the meso-level or the program level, there is a need to have closer monitoring of expectations and practices for assessment across all courses. Valuing assessment as an integral part of student learning, care must be given to what is communicated among instructors and to students in terms of what and how different types of assessments are used. This may require

identifying and providing support to instructors in developing innovative assessments or learning tasks that capture more than discipline content knowledge. Our reflective accounts on four signature pedagogies suggest that incorporating professional competences (cf., Shulman, 2005) into the course learning objectives helps meeting both learning and accountability goals of higher education. That is, course objectives must be well aligned with the program goal of nurturing a competent school psychologist in the above described case-based learning approach. We suggest that curriculum mapping is an important strategy to ensure that the surface, deep, and implicit structures cut across various courses and that there is an alignment between course objectives, assessments, and program goals. Ideally, course instructors of a program should be involved in curriculum planning and writing, which will ensure the alignment between the courses and the program and enhance their competence and confidence in the teaching and facilitating student learning.

At the macro-level or the institutional level, the academic plan provides a framework that is based on the values and goals of the institution. If innovative instructional practice is valued, then structures and supports must be in place to create safe and nurturing environments for instructors to be risk-takers in their teaching and assessment practices. The opportunity to learn through iterative cycles needs to be part of the enhancing innovative instructional practice that positively impacts student learning. From this framework, policies, processes and practices are articulated, implemented, and resourced in support of quality assurance of academic programs. Or, as referred to by Biggs and Tang (2011) "quality enhancement - of teaching and learning" (p. 4). As noted in the micro- and meso-levels, actions such as educational development and curriculum mapping need to be supported at the macro-level for change to have impact across the institution, as opposed to within courses or programs. At the macro-level, there is a need for visionary leadership that creates and supports a sustainable culture for innovative instructional practice.

Conclusion

With the increasingly complex contexts of learning in higher education, tensions have been identified that need to be examined in practice at the micro-, meso- and macro-levels. Guided by the Shulman's (2005) signature pedagogies and Tatar's (2007) design tensions frameworks, we identified tensions arising from assessment and pedagogical innovations in four approaches shared in this article. The approaches represented common issues associated with teaching and assessment in undergraduate and graduate programs for school practitioners. Through the work of modeling the design of signature pedagogies, we have attempted to address the issues associated with the teaching and assessment practices.

The challenge is the interwoven complexity of the tensions at the micro-, meso- and macro-levels. There is an expectation for instructors to be innovative in teaching and assessment whereas the institutional structures and support impede the degree and nature of the innovative practice. At the micro-level, instructors struggle to meet expectations of students, their own pedagogical goals, and institutional demands. A culture of risk-taking among instructors and students should be supported to sustain on-going innovations of teaching and learning practices in higher education. At the meso-level, we should maintain the balance between instructors' independence and each program's coherence in designing programs and relevant assessments. At the macro-level, institutional philosophy, policies, and practices should reflect its support for innovative instructional practices, by creating a safe environment for instructors to take risks. All three levels are called to these actions if the tensions are to be intentionally taken up as opportunities to create

strategies to continuously advance the design and implementation of innovative assessment and pedagogical practices in higher education.

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Appendix

Data Sources for Each Approach

Approach	Level	Number of Participants	Data Sources	Measures
Problem-Based Learning	undergraduate	Approx. 350	• online survey focus groups	assessment literacy
Game-Based Learning	graduate	15 (Total class size was 17)	• online microblogs • student assignments • informal surveys	principled approach to game-based learning
Case-Based Learning	graduate	3 (Total class size)	• client reasoning worksheets • semi-structured interviews • reflect log from the instructor	growth in clinical reasoning
Technology-Enhanced Learning	undergraduate	15 documents	• documents - course outlines that include assessment details (e.g., assessment criteria, rubrics)	alignment of learning outcomes with assignment expectations and assessment criteria