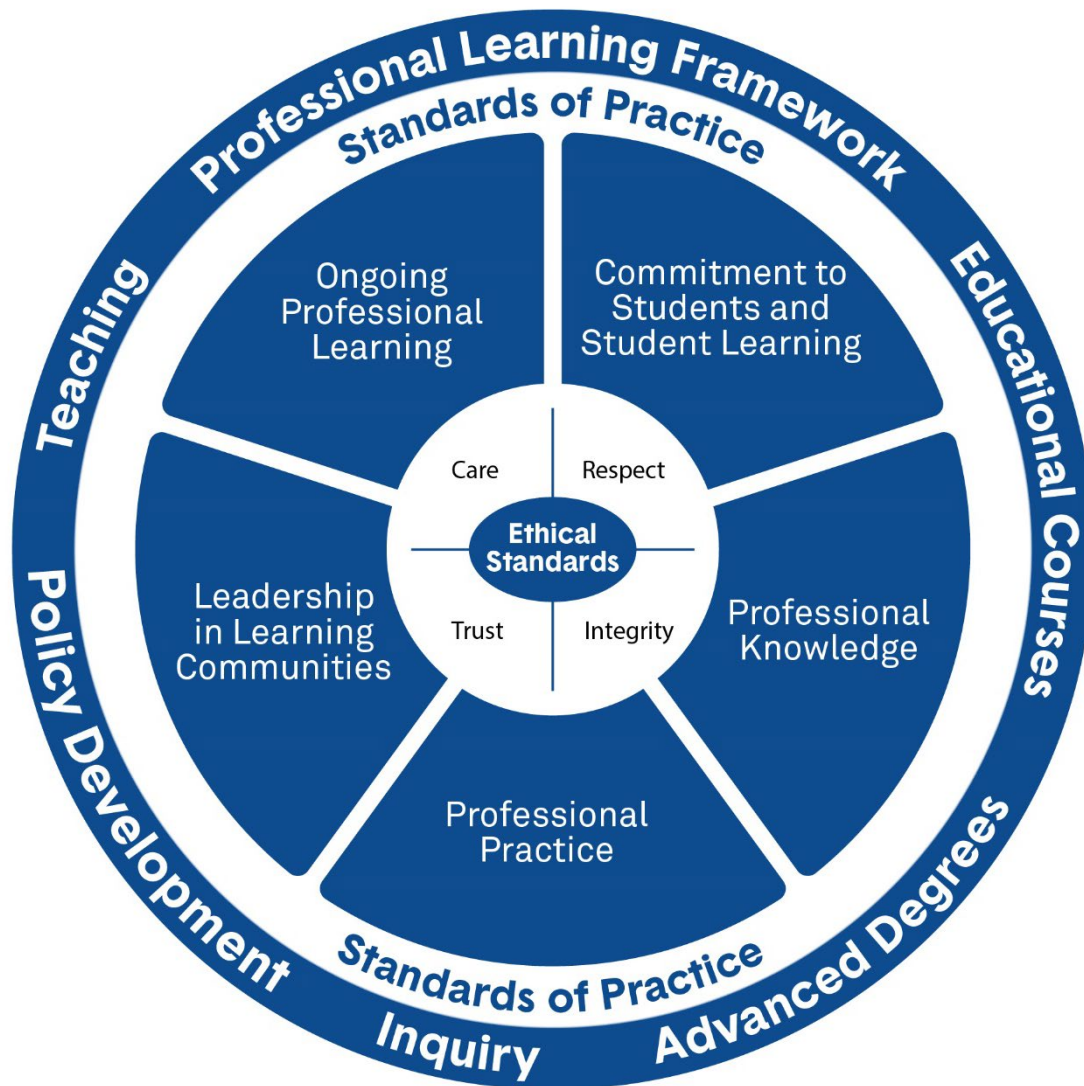




Additional Qualification Course Guideline Manufacturing Technology, Grades 9 and 10

Schedule B – Teachers' Qualifications Regulation
February 2021



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Additional Qualification Course Guideline for Manufacturing Technology, Grades 9 and 10

1. Introduction

Additional Qualification courses support educators in creating a safe, inclusive and welcoming learning environment and provide the context for educators to explore the professional knowledge and practices needed, as they strive to honour the strengths, interests and needs of every learner.

Creating inclusive learning environments requires the commitment of all partners – educators, learners, parents, families, guardians, caregivers and the community. This vision of inclusivity, as well as working to sustain it, requires ongoing effort and shared responsibility. This involves collectively and critically reflecting on the impact of policies, practices and processes on inclusive learning environments.

The following critical reflections (Figure 1) provide one of many possible frameworks that may guide educators in creating and sustaining a vision of inclusive education:

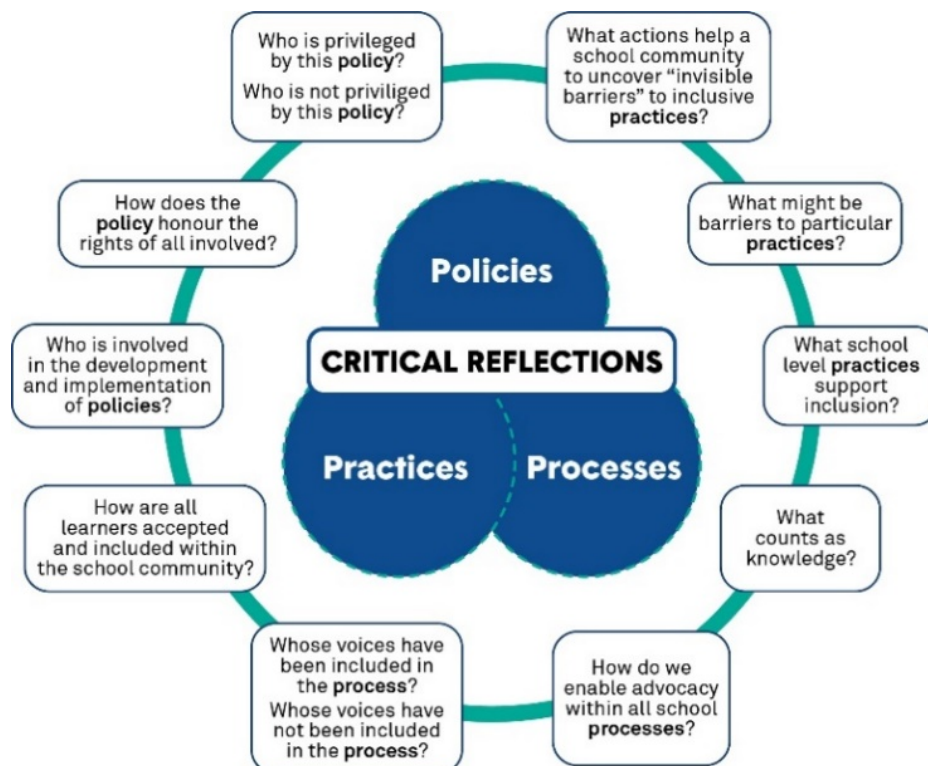


Figure 1: Critical Reflections

2. Conceptual Framework

The Schedule B *Manufacturing Technology, Grades 9 and 10* Additional Qualification course guideline provides a conceptual framework for providers and instructors to develop and facilitate the Schedule B *Manufacturing Technology, Grades 9 and 10* course. This guideline framework is intended to be a fluid, holistic and integrated representation of key concepts associated with *Manufacturing Technology, Grades 9 and 10*.

The Additional Qualification course guideline for *Manufacturing Technology, Grades 9 and 10* is organized using the following conceptual framework (Figure 2),

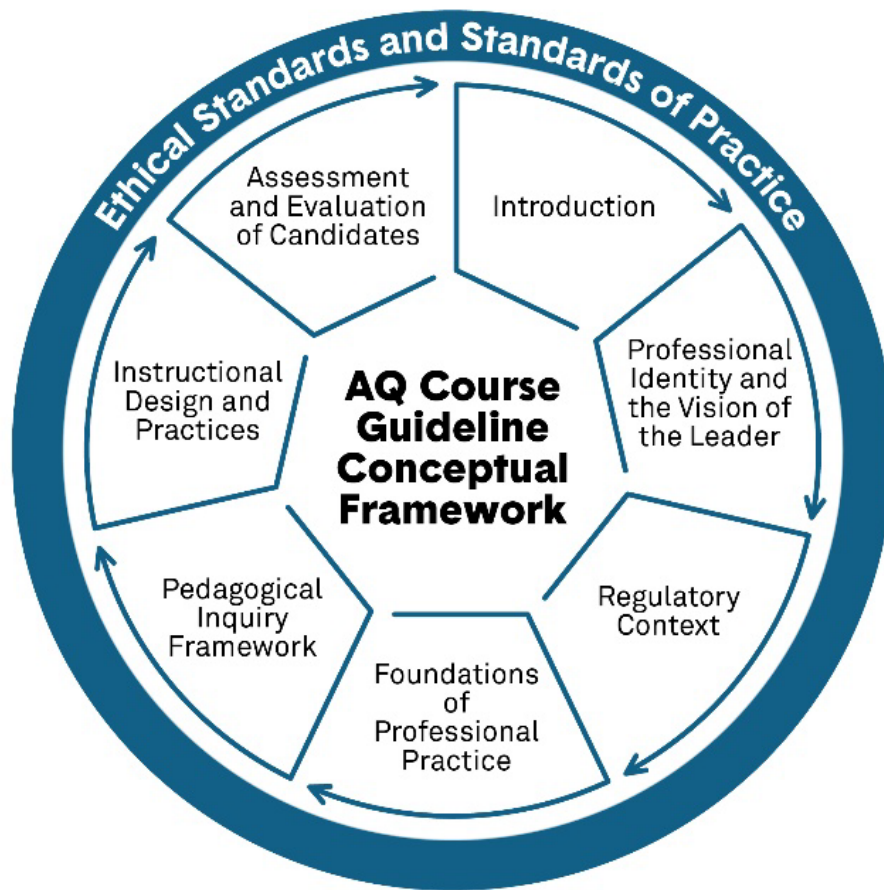


Figure 2: Conceptual Framework

The Additional Qualification Course: *Manufacturing Technology, Grades 9 and 10* serves a diverse group of previously qualified Technological Education teachers or general studies teachers who meet the requirements of the definition of Technological Qualifications in the Teachers' Qualifications Regulation. Candidates may include educators who want to become qualified to teach another Broad-Based Technology (B.B.T.) or obtain qualifications to enter the Honour Technological Studies Specialist course. It is beneficial for candidates to come to the Additional Qualification Course: *Manufacturing Technology, Grades 9 and 10* with background knowledge, skills and experience in this field of technology.

The Additional Qualification Course: *Manufacturing Technology, Grades 9 and 10* employs a critical, pedagogical lens to explore in a holistic and integrated manner theoretical foundations, learning theory, program planning, development and implementation, instructional design and practices, assessment and evaluation, the learning environment, research and ethical considerations related to teaching and learning within and across the divisions. Through these explorations, candidates strengthen professional efficacy by gaining in-depth knowledge, refining professional judgment and generating new knowledge for practice.

Educators qualified in *Manufacturing Technology, Grades 9 and 10* facilitate active inquiry-based learning by combining knowledge of student development and learning with knowledge and understanding of subject matter, pedagogy and technological expertise. Successful candidates of this Additional Qualification will demonstrate technical proficiency in each of the technologies identified in *Part 7, Demonstrated Competence in Manufacturing Technology, Grades 9 and 10*.

Additional Qualification Course Implementation

Course providers, instructors and developers will use this Additional Qualification guideline framework to inform the emphasis given to key guideline concepts in response to candidates' diverse professional contexts, knowledge, skills and understandings.

Critical to the holistic implementation of this course is the modeling of a positive learning environment that reflects care, diversity, equity and agency from an asset-based and ethical lens. This course supports the enhancement of professional knowledge, ethical practice, leadership and ongoing professional learning.

The Ontario College of Teachers recognizes that candidates working in the publicly funded school system, independent/private institutions or First Nations schools will have a need to explore topics and issues of particular relevance to the context in which they work or may work.

Provincial Context

The French language and the English language communities will also need to implement these guidelines to reflect the unique contextual dimensions and needs of each community. Each of these language communities will explore the guideline content from distinct perspectives and areas of emphasis. This flexibility will enable both language communities to implement *Manufacturing Technology, Grades 9 and 10* as understood from a variety of contexts.

Educators in Ontario work in varied and diverse educational contexts. Educators may find themselves in a variety of educational settings such as: a rural French language school, a Catholic school, an urban public school, a First Nation school, a provincial school, a private or independent school. Educators will reflect on the unique context of each community to enhance learning and well-being.

In this document, all references to “candidates” are to educators enrolled in the Additional Qualification course. References to “learners” indicate those enrolled in school programs.

3. Professional Identity and the Vision of the Learner

The professional identity of the Additional Qualification course instructor and course candidates conveyed in this Additional Qualification course guideline reflects the vision of the educator articulated in the *Ethical Standards for the Teaching Profession*, the *Standards of Practice for the Teaching Profession* and the *Professional Learning Framework for the Teaching Profession*, as well as through Additional Qualification consultations.

The professional identity of the educator positions members of the teaching profession as innovative scholars and practitioners, critical pedagogues who forward social and ecological justice. Additional qualification courses support this collective professional identity (Figure 3, Vision of the Educator).

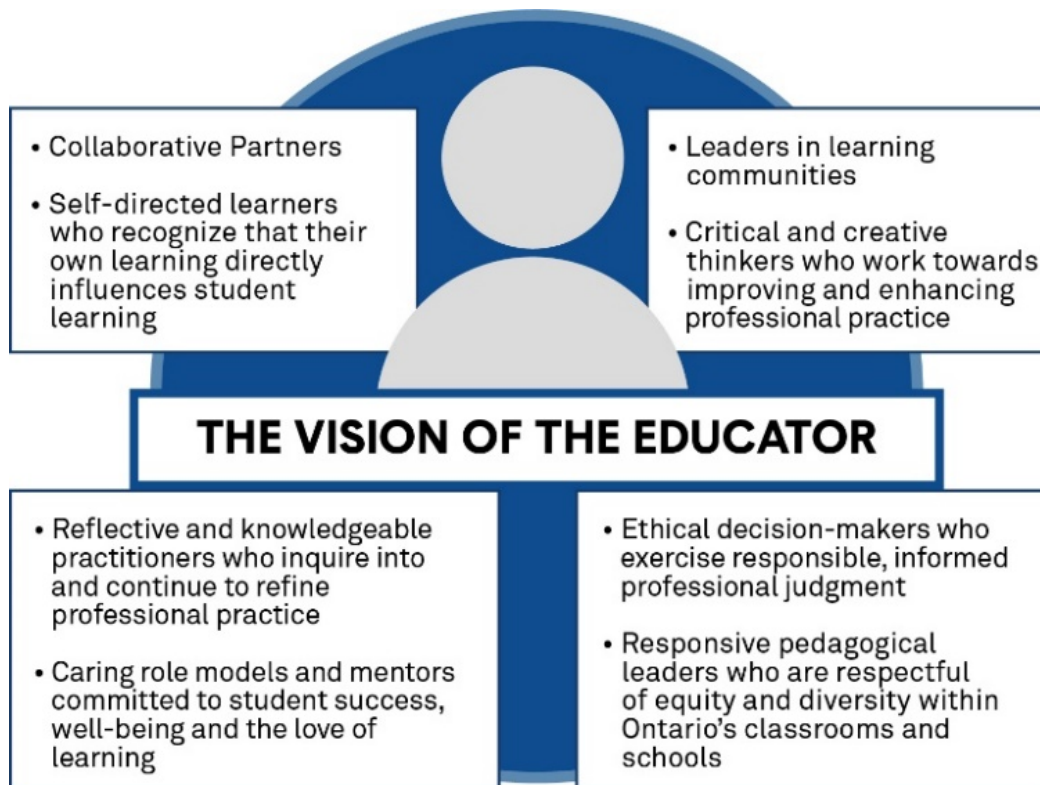


Figure 3: Vision of the Educator¹

The learner conveyed in this Additional Qualification (Figure 4) is empowered, independent, a democratic citizen, knowledgeable, creative, collaborative, a critical thinker, ethical, reflective, accepting, inclusive, courageous, self-efficacious, a problem-solver, and whose voice, perspectives and sense of efficacy and agency are integral to shaping the teaching and learning process.

¹ Note. From "The Foundations of Professional Practice," by Ontario College of Teachers, 2016, p. 16. Copyright 2016 by Ontario College of Teachers. Reprinted with permission.

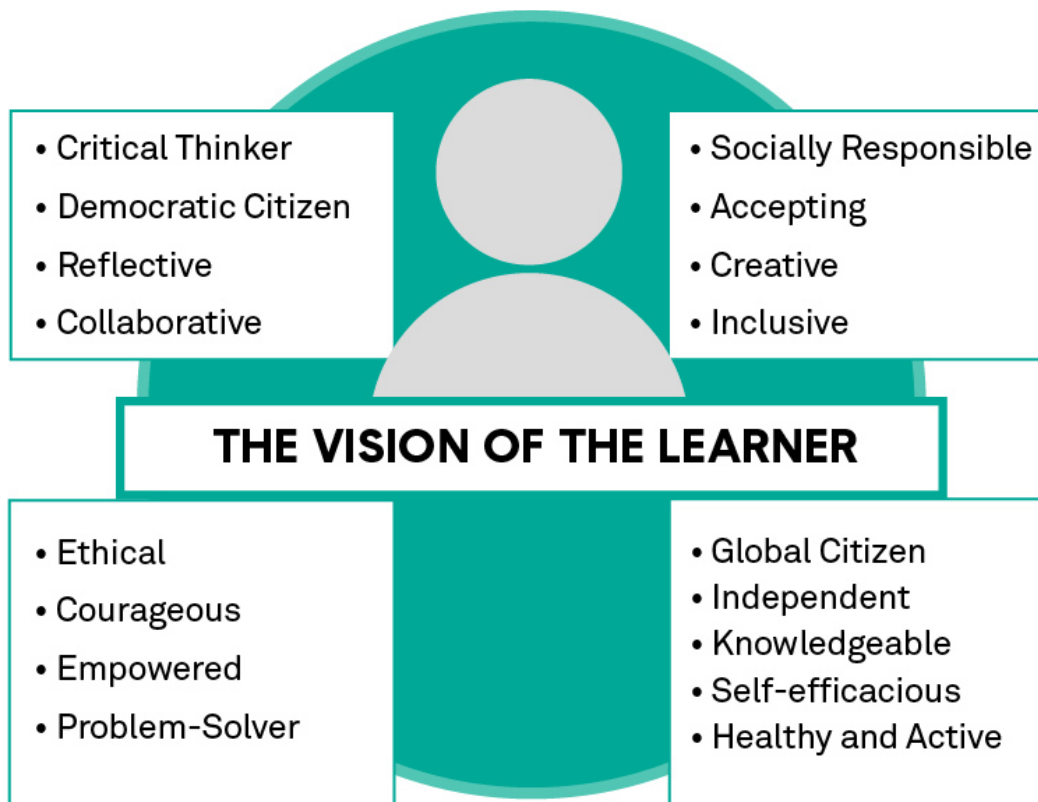


Figure 4: Vision of the Learner

4. Regulatory Context

The College is the self-regulating body for the teaching profession in Ontario. The College’s responsibility related to courses leading to Additional Qualifications includes the following:

- to establish and enforce professional standards and ethical standards applicable to members of the College
- to provide for the ongoing education of members of the College
- to accredit Additional Qualification courses and more specifically,

The program content and expected achievement of persons enrolled in the program match the skills and knowledge reflected in the College’s “Standards of Practice for the Teaching Profession” and the “Ethical Standards for the Teaching Profession” and in the program guidelines issued by the College. (Regulation 347/02, Accreditation of Teacher Education Programs, Part IV, Subsection 24).

Additional Qualifications for educators are identified in the *Teachers' Qualifications Regulation* (Regulation 176/10). This regulation includes courses that lead to Additional Qualifications, the Principal's Development Qualification, the Principal's Qualifications, the Primary Division, the Junior Division and the Supervisory Officer's Qualifications. A session of a course leading to an Additional Qualification shall consist of a minimum of 125 hours as approved by the Registrar. Accredited Additional Qualification courses reflect the *Ethical Standards for the Teaching Profession*, the *Standards of Practice for the Teaching Profession* and the *Professional Learning Framework for the Teaching Profession*.

The Additional Qualification course developed from this guideline is open to candidates who meet the entry requirements identified in the *Teachers' Qualifications Regulation*.

Successful completion of the course leading to the Additional Qualification Course: *Manufacturing Technology, Grades 9 and 10*, listed in Schedule B of the *Teachers' Qualifications Regulation*, is recorded on the Certificate of Qualification and Registration.

5. Foundations of Professional Practice

The *Foundations of Professional Practice* conveys a provincial vision of what it means to be an educator in Ontario. This vision lies at the core of educator professionalism. The *Ethical Standards for the Teaching Profession* and the *Standards of Practice for the Teaching Profession* (see Appendix 1) are the foundation for the development and implementation of the Additional Qualification course. These nine standards, as principles of professional practice, provide the focus for ongoing professional learning in the Additional Qualification Course: *Manufacturing Technology, Grades 9 and 10*. In addition, the *Professional Learning Framework for the Teaching Profession* is underpinned by the standards, articulates the principles on which effective educator learning is based and acknowledges a range of options that promote continuous professional learning.

The ongoing enhancement of informed professional judgment, which is acquired through the processes of lived experience, inquiry and critical reflection, is central to the embodiment of the standards and the *Professional Learning Framework for the Teaching Profession* within this Additional Qualification course and professional practice.

The *Ethical Standards for the Teaching Profession* and the *Standards of Practice for the Teaching Profession* serve as guiding frameworks that underpin professional knowledge, skills and experiences that educators require in order to teach effectively within and contribute to an environment that fosters *respect, care, trust* and *integrity*.

Teacher Education Resources

The College has developed resources to support the effective integration of the standards within Additional Qualification courses. These teacher education resources (see Appendix 2) explore the integration of the standards within professional practice through a variety of educative, research and inquiry-based processes. These resources can be found on the [College web site](#).

These teacher education resources support the development of professional knowledge, judgment and efficacy through critical reflective praxis. The lived experiences of Ontario educators are illuminated in these teacher education resources and serve as key supports for Additional Qualification courses.

6. Pedagogical Inquiry Framework

The pedagogical inquiry framework (Figure 5) for *Manufacturing Technology, Grades 9 and 10* supports a holistic, integrated, experiential and inquiry-based Additional Qualification course. This pedagogical inquiry framework supports the professional knowledge, judgment, critical pedagogies and practices of course candidates.

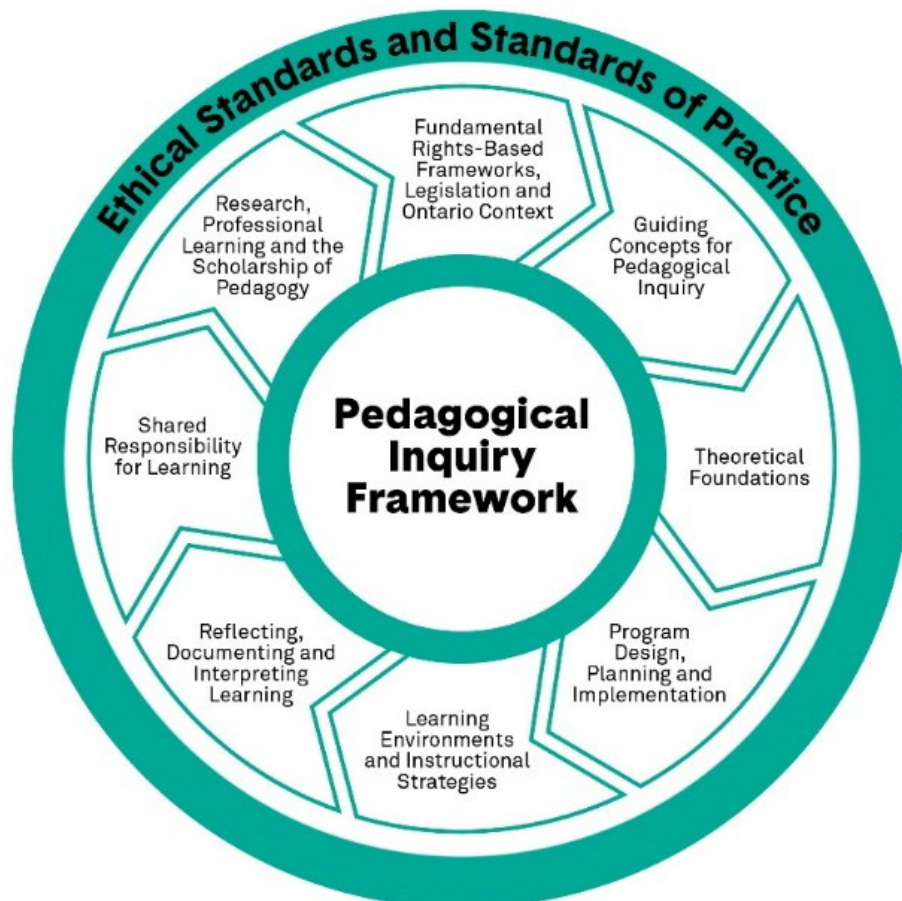


Figure 5: Pedagogical Inquiry Framework for *Manufacturing Technology, Grades 9 and 10*

A. The Ethical Standards for the Teaching Profession and the Standards of Practice for the Teaching Profession

The *Ethical Standards for the Teaching Profession* and the *Standards of Practice for the Teaching Profession* represent a collective vision of professional practice. At the heart of a strong and effective teaching profession is a commitment to learners and their learning. Members of the Ontario College of Teachers, in their position of trust, demonstrate responsibility in their relationships with learners, parents, families, caregivers, guardians, educational partners, colleagues, other professionals, the environment and the public.

The holistic integration of the standards within all course components supports the embodiment of the collective vision of the teaching profession that guides professional knowledge, learning and practice. The following principles and concepts support this holistic integration within the Additional Qualification course:

- understanding and embodying care, trust, respect and integrity
- fostering commitment to students and student learning
- integrating professional knowledge
- enriching and developing professional practice
- supporting leadership in learning communities
- engaging in ongoing professional learning.

Course candidates will continue to critically inquire into professional practices, pedagogies and ethical cultures through professional dialogue, collaborative reflection and the lenses of the *Ethical Standards for the Teaching Profession* and the *Standards of Practice for the Teaching Profession*.

B. Fundamental Rights-Based Frameworks, Legislation and Ontario Context

Local, provincial, national and international rights-based frameworks and legislation are paramount to the development and implementation of Additional Qualification courses. These highlighted the requirements and responsibilities for sustaining human rights, social justice, liberatory practices and accessibility for all.

AQ Providers, course developers and course candidates are entreated to engage in critical reflection and dialogue related to these frameworks and legislations and explore the significance for professional practice.

The list below, though non-exhaustive, provides a starting point for exploration within the context of the AQ course:

- [Ontario curriculum](#)
- Ontario Human Rights Code
- Accessibility for Ontarians with Disabilities Act, S.O., 2005, c. 11
- Ontarians with Disabilities Act, S.O., 2001, c. 32

- *Canadian Charter of Rights and Freedoms Part 1 Schedule B Constitution Act 1982*
- Canadian Human Rights Act of 1977
- Truth and Reconciliation Commission of Canada: Calls to Action
- United Nations Convention on the Rights of the Child
- United Nations Declaration on the Rights of Indigenous Peoples
- United Nations Convention on the Rights of Persons with Disabilities.

These documents inform the design, development and implementation of the Additional Qualification Course: *Manufacturing Technology, Grades 9 and 10*.

C. Guiding Concepts for Pedagogical Inquiry

The following theoretical concepts are provided to facilitate the holistic design and implementation of this Additional Qualification course through pedagogical and professional inquiries.

This Additional Qualification course supports critical reflective inquiry and dialogue informed by the following concepts that will be critically explored through equitable, holistic and interrelated processes:

- critically exploring biases, assumptions, beliefs, understandings, power and privilege associated with teaching and learning within the context of this Additional Qualification
- critically exploring the professional identity and practices associated with the vision of educators as co-inquirers, scholars and researchers working alongside empowered learners in the co-creation of democratic, knowledge-rich learning environments
- critically exploring and interpreting Ontario's curriculum, policies, frameworks, strategies and guidelines
- collaboratively examining and integrating the meaningful and respectful inclusion of First Nations, Métis, and Inuit ways of knowing, cultures, histories and perspectives in teaching and learning processes as valid means to understand the world
- facilitating the critical exploration of the concept of cultural appropriation and the impact on professional practices
- critically exploring multiple ways of knowing and being in community
- applying critical pedagogy as a theoretical foundation for the design, assessment and implementation of practices and/or programs

- critically exploring pedagogical processes, including assessment and evaluation practices, that link curriculum to learners' interests, strengths, inquiries, needs and well-being
- critically examining processes, practices and policies to create and sustain holistic learning environments that nurture the identities of learners and their intellectual, social, emotional, physical, linguistic, cultural, spiritual and moral development
- engaging and collaborating with school personnel, parents, families, caregivers, guardians, the community, local business and industry as it relates to *Manufacturing Technology, Grades 9 and 10*
- critically exploring engagement processes and practices intended to foster collaboration with learners, in-school personnel, parents, families, caregivers, guardians and the community to support the learning, identities and well-being of the school community
- critically exploring and integrating a variety of technologies (communication, design and production) to enhance professional knowledge and facilitate innovative assessment and evaluation practices in support of learning, independence, well-being and agency
- critically exploring professional practice through ongoing collaborative inquiry, dialogue, reflection, innovation and critical pedagogy
- critically examining the ethical principles, ethical knowledge and ethical actions that contribute to collective ethical pedagogy and leadership
- critically exploring and integrating environmentally sustainable practices, policies and pedagogies
- critically examining processes to foster responsible and active environmental stewardship, ecological consciousness, social justice and democratic citizenship within local, national and global contexts
- collaboratively exploring the co-construction of communities of inquiry committed to critical pedagogy, ongoing professional learning and collective professional efficacy
- critically reflecting on the ethical use of technology to support learners' safety, privacy and well-being
- critically exploring innovative practices for integrating information and communication technology to enhance teaching and learning

- critically examining the processes involved in creating and sustaining safe, healthy, equitable, holistic and inclusive learning environments that honour and respect diversity, facilitate learning, foster learner voice and perspectives, encourage critical thinking and promote social justice
- critically examining qualitative and quantitative research associated with professional practices, policies and pedagogies in support of learning, empowerment and agency
- critically exploring and integrating educational processes, practices and policies that support learners' well-being and efficacy
- critically exploring and integrating inclusive processes for fostering interprofessional collaboration that support the collaborative development and implementation of Individual Education Plans (I.E.P.) and Transition Plans for learners that include the voices and perspectives of all those involved
- critically examining processes, practices and policies that contribute to a school and/or system culture of inquiry that promotes openness to innovation, change, culturally-inclusive pedagogies and the democratization of knowledge
- critically exploring practices to challenge dominant discourses and assumptions related to *Manufacturing Technology, Grades 9 and 10*
- critically analyzing systemic manifestations of power and privilege and their implications for teaching and learning
- critically exploring and integrating emerging technologies that support *Manufacturing Technology, Grades 9 and 10*
- critically reflecting on health and safety risks associated with *Manufacturing Technology, Grades 9 and 10*
- critically applying knowledge and skills to create and maintain a safe learning environment that addresses program needs: curriculum, material handling, tool handling and equipment storage, supervision, safety standards and practices that are respectful of the environment
- collaboratively exploring and integrating technological literacy related to *Manufacturing Technology, Grades 9 and 10*
- designing and managing portfolios as well as developing written technical reports
- critically exploring and integrating mathematical and financial literacy in *Manufacturing Technology, Grades 9 and 10*

- collaboratively exploring business management and entrepreneurial practices related to *Manufacturing Technology, Grades 9 and 10*
- collaboratively and critically inquiring into practice through reflection, active engagement and innovation
- critically reflecting on the various professional practices and career opportunities associated with *Manufacturing Technology, Grades 9 and 10*
- critically exploring and integrating differentiated instruction, universal design and experiential learning to support learner growth and development.

D. Theoretical Foundations of Manufacturing Technology, Grades 9 and 10

The exploration of the following guiding concepts will be facilitated through equitable, holistic and interrelated inquiry processes:

- critically exploring various theoretical frameworks underpinning this Additional Qualification, the principles fundamental to these frameworks and their practical applications in supporting learning
- critically exploring and integrating theories of development and identity formation to inform practice and support learner well-being, efficacy and agency
- critically exploring the relevance of critical pedagogy and socio-constructivist theories as theoretical foundations for this Additional Qualification
- critically exploring current theoretical research, literature and scholarship related to this Additional Qualification
- critically exploring the *Ethical Standards for the Teaching Profession* and the *Standards of Practice for the Teaching Profession* as theoretical foundations for educator professionalism within the Additional Qualification Course: *Manufacturing Technology, Grades 9 and 10*
- critically reflecting on teaching practice and engaging in professional dialogue regarding the reciprocal relationship between practice and theory
- critically exploring critical pedagogy that is committed to curriculum design using learners' inquiry questions, passions and interests
- critically exploring Ontario curriculum, resources and government policies, frameworks and strategies related to *Manufacturing Technology, Grades 9 and 10*

- critically exploring and integrating learning theories and the individual learning strengths, profiles and needs of learners
- critically and collaboratively inquiring into the dimensions associated with creating and sustaining safe, healthy, equitable, inclusive, accepting and engaging learning environments
- critically exploring and integrating holistic and inclusive educational programs that build on learners' abilities, interests and experiences and empower them to reach their learning goals
- critically exploring the significance of relevant legislation at the municipal, provincial, federal and international levels and associated responsibilities of professional practice
- critically exploring educators' legal obligations and ethical responsibilities according to current provincial legislation and practices
- critically exploring provincial legislation and policies that support accessibility for all
- critically exploring provincial legislation and policies that support human rights for all
- critically exploring provincial legislation and policies that support privacy for all
- critically exploring innovative practices for integrating artistic expression to enhance teaching and learning
- critically exploring and integrating problem-solving processes, methods and approaches as they relate to *Manufacturing Technology, Grades 9 and 10*
- critically exploring and integrating the fundamental technological concepts associated with *Manufacturing Technology, Grades 9 and 10*.

E. Program Design, Planning and Implementation

The exploration of the following guiding concepts will be facilitated through equitable, holistic and interrelated inquiry processes:

- critically exploring and deepening understanding of how the *Ethical Standards for the Teaching Profession* and the *Standards of Practice for the Teaching Profession* can inform a program planning framework
- critically exploring the influence of society's diverse and changing nature on learning and well-being

- critically exploring and deepening understanding of program design, planning, development and implementation strategies and frameworks related to *Manufacturing Technology, Grades 9 and 10*
- critically exploring the philosophical underpinnings that strengthen educators' professional efficacy to support curricular and interdisciplinary integration
- critically exploring various approaches to curricular integration through diverse planning models, content and resource development, pedagogical practices and the implementation of assessment and evaluation practices that are fair, transparent and equitable
- critically exploring and deepening understanding of differentiated instruction, universal design and the tiered approach in program planning development and implementation
- critically exploring research-based, leading-edge and culturally inclusive learning resources that support learning, engagement, self-identities, safety and well-being
- critically exploring the types of secondary school pathways (including apprenticeship, college, university and workplace) and their relationship to learners' post-secondary goals and career opportunities
- critically exploring a variety of assistive technologies to support learning and well-being
- critically designing programs that reflect the ethical use of technology in support of learners' safety, privacy and well-being
- critically exploring and planning learning opportunities and programs that support various educational pathways and goals
- critically exploring how learners' lived experiences, identities, narratives, development, strengths, inquiries, interests and needs can inform program planning, development and implementation
- critically exploring the integration of culturally inclusive pedagogies within program design, planning and development
- critically exploring strategies that support learners' well-being and self-regulation
- critically exploring planning and instructional processes that honour the learning profiles, voice, perspectives, strengths and experiences of learners

- critically exploring practices that promote deeper engagement and understanding of course inquiries through understanding the learner's own curiosities and leveraging the learner's own context and experience
- critically exploring pedagogical documentation and utilizing a variety of assessment processes to inform program planning, support learning and foster engagement
- facilitating shared leadership in the implementation of local and provincial guidelines and policies that support safe and effective learning environments
- critically inspecting and reporting on the learning environment, facilities, equipment needs, resources and state of maintenance and repair for delivering *Manufacturing Technology, Grades 9 and 10*
- critically applying the theoretical foundations of *Manufacturing Technology, Grades 9 and 10* by incorporating the broad-based pedagogical approach that embeds problem solving and fundamental technological concepts
- fostering leadership and shared responsibility for the safe, ethical and legal use of technology in *Manufacturing Technology, Grades 9 and 10* programs.

F. Learning Environments and Instructional Strategies

The exploration of the following guiding concepts will be facilitated through equitable, holistic and interrelated inquiry processes:

- critically exploring processes for the creation of inclusive and vibrant learning environments that reflect the *Ethical Standards for the Teaching Profession* and the *Standards of Practice for the Teaching Profession*
- creating and sustaining ethical, positive, equitable, accepting, inclusive, safe, healthy and engaging learning environments for learners and parents, families, caregivers and guardians
- critically exploring safe learning environments, practices and policies that honour learner agency, assets and interests
- critically exploring processes for engaging all members of the community, supporting dialogue and collegiality and nurturing a sense of belonging
- critically exploring processes for fostering a collaborative community of empowered and engaged learners

- fostering engaging, trusting and inviting learning environments that promote learner voice and perspectives, leadership, critical inquiry and self-regulation
- critically exploring a variety of instructional strategies to support learning and well-being
- cultivating safe, ethical, legal and respectful practices in the use of different technological tools that support pedagogical practices
- critically exploring inclusive and innovative learning environments that integrate a variety of instructional strategies to respond to the interests and needs of all learners (for example, universal design, experiential learning, differentiated instruction, inquiry and the tiered approach)
- critically exploring processes that engage learners as active, democratic and global citizens in supporting environmental, social and economic sustainability
- critically exploring the professional identity, knowledge and leadership practices of educators as described in the *Ethical Standards for the Teaching Profession*, the *Standards of Practice for the Teaching Profession*, the *Professional Learning Framework for the Teaching Profession* and the *Foundations of Professional Practice*
- exploring methods for consensus-building, participatory democracy and empowerment at the school and community levels
- fostering shared leadership and responsibility for the safe and effective management of a variety of technical learning environments
- promoting a shared commitment and responsibility towards planning, organizing and implementing effective health, safety, sanitation and environmental standards in the *Manufacturing Technology, Grades 9 and 10* facility
- cultivating a culture of shared leadership and responsibility towards facility design and maintenance practices as per industry standards
- fostering a culture of collective understanding and compliance with workplace health and safety legislation and standards related to *Manufacturing Technology, Grades 9 and 10*.

G. Reflecting, Documenting and Interpreting Learning

The exploration of the following guiding concepts will be facilitated through equitable, holistic and interrelated inquiry processes:

- critically exploring fair, equitable, transparent, valid and reliable assessment and evaluation methods that honour the dignity, emotional wellness, identities and development of all learners
- critically exploring feedback processes that empower and inspire learners to positively reflect on and identify goals for their learning
- fostering an examination of feedback that engages learners in the critical analysis and interpretation of the learning process
- critically exploring equitable and inclusive processes for reflecting, documenting and interpreting learning
- critically exploring and integrating assessment, evaluation and reporting practices that align with the principles and processes of Ontario's curriculum, frameworks and policy documents
- critically exploring assessment practices for the following three purposes: to provide feedback to learners and to adjust instruction (assessment *for* learning); to develop learners' capacity to be independent, autonomous learners (assessment *as* learning); to make informed professional judgments about the quality of learning (assessment *of* learning).

H. Shared Responsibility for Learning

The exploration of the following guiding concepts will be facilitated through equitable, holistic and interrelated inquiry processes:

- critically exploring a variety of effective communication and engagement strategies for authentic collaboration with parents, families, caregivers, guardians, school/board personnel and community agencies
- fostering open and transparent partnerships with parents, families, caregivers and guardians that honour and value shared decision-making, confidentiality, advocacy and leadership
- critically and creatively exploring processes to encourage and honour learners' voice, perspectives and identities in the learning process through shared decision-making and leadership
- critically exploring strategies and opportunities for professional collaboration that support learning, well-being and leadership
- critically exploring and openly addressing biases, discrimination and systemic barriers in order to support learning, well-being and inclusion

- critically exploring and analyzing positive, inclusive educational and professional cultures in which voices and perspectives are freely expressed and critically analyzed
- understanding and respecting the importance of shared responsibility and partnership that promotes social and ecological justice as conveyed in the *Foundations of Professional Practice*
- critically exploring professional collaboration within interdisciplinary teams to support learning, self-advocacy and transitions
- collaboratively designing strategies for establishing links between the school community, industry and the *Manufacturing Technology, Grades 9 and 10* program
- critically exploring and integrating sector-specific learning opportunities in other curriculum areas.

I. Research, Professional Learning and the Scholarship of Pedagogy

The exploration of the following guiding concepts will be facilitated through equitable, holistic and interrelated inquiry processes:

- critically exploring and reflecting on past, current and evolving practices in *Manufacturing Technology, Grades 9 and 10*
- critically exploring professional practice through ongoing inquiry into theory and pedagogy/andragogy
- engaging in transformational professional learning through research, scholarship and leadership
- critically exploring critical pedagogy that integrates research and the scholarship of pedagogy/andragogy into teaching practice
- engaging in research and the scholarship of critical pedagogy/andragogy to advance communities of practice
- critically exploring knowledge-creation and mobilization to enhance professional practice and leadership
- critically exploring ethical responsibilities in research and scholarship that honour and embody the *Ethical Standards for the Teaching Profession*
- critically exploring theories and pedagogies about multiple forms of oppression, power and privilege.

7. Demonstrated Knowledge and Skill in Manufacturing Technology, Grades 9 and 10

Successful candidates will be able to demonstrate technical knowledge and skill in the following:

Manufacturing Processes and Operations

- exploring the history of the manufacturing industry
- exploring primary and secondary manufacturing processes and technologies
- exploring simple speeds and feeds calculations.

Designing and Planning Process

- exploring and applying a systematic approach to problem solving (for example, Simulation Program with Integrated Circuit Emphasis [S.P.I.C.E.] model)
- developing and interpreting technical drawings/sketches and technical reports as required in the design and manufacture of a product
- exploring and selecting appropriate materials, tools and equipment required to manufacture a product
- developing a process plan for the manufacture of a product
- converting drawing dimensions and measurements using the appropriate chart, table or formula.

Tools, Equipment and Materials

- exploring a variety of appropriate manufacturing tools and equipment
- explaining the function, purpose and operation of machine tools, equipment and technologies
- exploring properties and characteristics of various manufactured materials
- recognizing, selecting and using a variety of tools to accurately measure project components according to specifications
- understanding the different mathematical systems of measurement
- setting up and appropriately using hand tools, machine tools, power tools and equipment properly in preparation for the manufacture of a product
- selecting and using a variety of materials in manufacturing a product.

Career Opportunities

- exploring the range of career opportunities within the manufacturing industry
- examining programs and pathways associated with the manufacturing industry and evaluating these with respect to individual career plans.

Technology and the Environment

- investigating the impact of manufacturing processes on the environment
- explaining the importance of “reduce, reuse and recycle” and Life Cycle Assessment (L.C.A.) when designing, manufacturing and marketing a product
- using proper storage and disposal techniques of materials and waste products that enhance environmental sustainability
- applying proper recycling for waste materials produced in manufacturing processes.

Health and Safety

- exploring current Ministry policies, guidelines and reports in the specific area of broad-based technology curriculum
- exploring and applying health and safety rules, responsibilities and procedures in manufacturing environments
- exploring Workplace Hazardous Materials Information System (W.H.M.I.S.), Safety Data Sheets (S.D.S.) and basic health and safety related to the manufacturing industry
- recognizing, describing and using personal protective equipment as required to ensure their own and others’ safety in the work environment
- exploring and complying with health and safety standards related to facilities, processes, materials, tools and equipment
- demonstrating the safe use of tools and equipment in compliance with safety manuals, instructions and institutional requirements.

8. Instructional Design and Practices in the Additional Qualification Course: Manufacturing Technology, Grades 9 and 10

The instructional design and practices (Figure 6) employed in this Additional Qualification course reflect adult learning theories, effective andragogical processes and experiential learning methods that promote critical reflection, dialogue and inquiry.

Candidates collaboratively develop with course instructors the specific learning inquiries, learning experiences, holistic integration processes and forms of assessment and evaluation that will be used throughout the course.

In the implementation of this Additional Qualification course, instructors **facilitate** andragogical processes that are relevant, meaningful and practical to provide candidates with inquiry-based learning experiences related to program design, planning, instruction, pedagogy, integration and assessment and evaluation. The andragogical processes include but are not limited to: experiential learning, role-play, simulations, journal writing, self-directed projects, independent study, small group interaction, dialogue, action research, inquiry, pedagogical documentation, collaborative learning, narrative, case methodologies and critical reflective praxis.

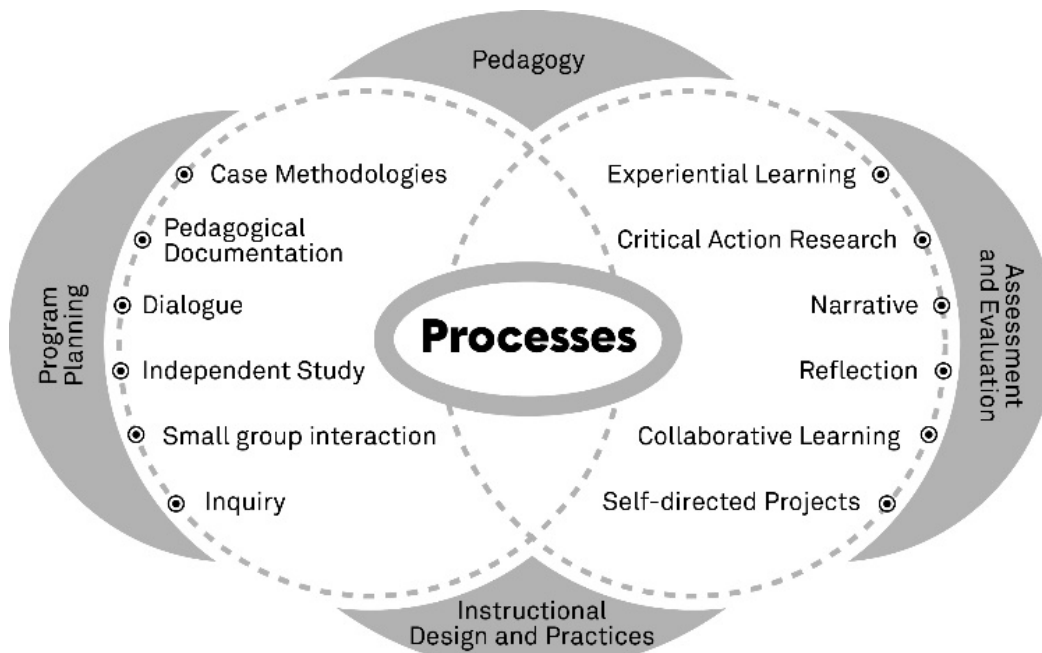


Figure 6: Instructional Processes

Instructors **embody** the *Ethical Standards for the Teaching Profession* and the *Standards of Practice for the Teaching Profession*, honour the principles of adult learning, respect candidates' experience, recognize prior learning, integrate culturally inclusive practices and respond to individual inquiries, interests and needs. Important to the course are opportunities for candidates to create support networks, receive feedback from colleagues and instructors and share their learning with others. Opportunities for professional reading, reflection, dialogue and expression are also integral parts of the course.

Instructors **model** critical inquiry, universal design, differentiated instruction and assessment practices that can be replicated or adapted in a variety of classroom settings.

Experiential Learning

Candidates will be provided with opportunities to engage in experiential learning related to key concepts and aspects of *Manufacturing Technology, Grades 9 and 10* as collaboratively determined by both the instructor and course candidates. The intent of the experiential learning opportunities is to support the application and integration of practice and theory within the authentic context of teaching and learning. Candidates will also engage in critical reflection and analysis of their engagement in experiential learning opportunities and inquiries related to *Manufacturing Technology, Grades 9 and 10*.

The professional judgment, knowledge, skills, efficacy and pedagogical practices of candidates will be enhanced and refined through experiential learning and critical inquiry.

The College's standards-based resources help to support experiential learning through various professional inquiry processes. These resources can be found on the [College web site](#).

9. Assessment and Evaluation of Candidates

At the beginning of the course, candidates will collaboratively develop with course instructors the specific learning inquiries, experiences and forms of assessment and evaluation that will be used throughout the course. Instructors will provide opportunities for regular and meaningful feedback regarding candidates' progress throughout the course.

A balanced approach to candidate assessment and evaluation is used. It includes the combination of self, peer and mutual (instructor and candidate) assessment, as well as instructor evaluation. The assessment and evaluation strategies reflect effective, collaborative and inquiry-based practices. A

variety of assessment approaches will be used that enable candidates to convey their learning related to course inquiries. The course provides opportunities for both formative and summative assessment and evaluation.

Central to candidates enrolled in Additional Qualification courses is the opportunity to be engaged in relevant and meaningful inquiries. Assignments, artefacts and projects enable candidates to make connections between theory and practice. At the same time, assignments also allow candidates flexibility, choice and the opportunity to design individual inquiry opportunities.

Learning processes support an in-depth exploration of concepts and inquiries. These processes occur over the duration of the course and are reflective of critical thinking and reflection as the candidate gains knowledge and skills over the duration of the course

The evaluation practices will also support significant and in-depth critical inquiries utilizing a variety of processes over the duration of the course. These inquiry-based assessment processes provide opportunities for candidates to illustrate a depth of professional knowledge, skills, pedagogies, ethical practices and instructional leadership.

A final culminating experience in the course is recommended. This synthesis experience will reflect the in-depth knowledge and understanding gained as a result of engagement in this Additional Qualification. It will also include critical reflections and an analysis of a candidate's learning over time.

The following processes are provided to guide practices associated with assessment and evaluation within this Additional Qualification course and are reflective of experiential learning and critical pedagogies. This list is not exhaustive.

- | | |
|--|---|
| <p>a) Pedagogical Leadership: co-constructing, designing and critically assessing culturally inclusive learning opportunities that integrate voice and perspectives, strengths, interests and needs. The learning opportunities will incorporate a variety of technologies and resources and are reflective of Ministry of Education curriculum</p> | <p>b) Pedagogical Documentation: assembling visible records (for example, written notes, photos, videos, audio recordings, artefacts and records of learning) that enable educators, parents, families, caregivers, guardians and learners to discuss, interpret and reflect upon the learning process</p> |
|--|---|

- c) **Critical Reflection:** critically analyzing educational issues associated with this Additional Qualification utilizing scholarly research through multiple representations (for example, narratives, written documentation and images or graphics)
- d) **Critical Action Research:** engaging in individual and/or collaborative action research that is informed by the critical exploration of various action research approaches
- e) **Case Inquiry:** critically reflecting on and inquiring into professional practice through case writing and/or case discussion
- f) **Transition Plan:** critically reflecting on and analyzing a transition plan and generating recommendations for enhancement
- g) **Narrative Inquiry:** collaboratively and critically analyzing narratives of teaching and learning through a number of lenses (for example, professional identity, professional efficacy, ethical leadership and critical pedagogies) utilizing the processes of narrative writing and/or narrative discussion
- h) **Pedagogical Portfolio:** creating a professional portfolio that critically analyzes teaching and learning philosophies, assumptions, practices and pedagogies designed to inform ethical and democratic learning environments
- i) **Innovative Learning Experience:** designing and facilitating an engaging, innovative learning experience that reflects differentiated instruction, universal design and the tiered approach
- j) **Partnership Plan:** designing a comprehensive plan that engages learners, parents, families, caregivers, guardians and the school and local communities in collaborative partnerships that support learning, growth and well-being
- k) **I.E.P. Development:** collaboratively supporting an I.E.P. with parents, families, caregivers, guardians, learners and the school team
- l) **Visual Narrative:** creating a visual narrative (for example, digital story) that helps to support the collective professional identity of the teaching profession and advances professional knowledge and pedagogy.

Appendix 1

The Ethical Standards for the Teaching Profession

The *Ethical Standards for the Teaching Profession* represent a vision of professional practice. At the heart of a strong and effective teaching profession is a commitment to students and their learning. Members of the Ontario College of Teachers, in their position of trust, demonstrate responsibility in their relationships with students, parents, guardians, colleagues, educational partners, other professionals, the environment and the public.

The Purposes of the Ethical Standards for the Teaching Profession are:

- to inspire members to reflect and uphold the honour and dignity of the teaching profession
- to identify the ethical responsibilities and commitments to the teaching profession
- to guide ethical decisions and actions in the teaching profession
- to promote public trust and confidence in the teaching profession.

The Ethical Standards for the Teaching Profession are:

Care

The ethical standard of *Care* includes compassion, acceptance, interest and insight for developing students' potential. Members express their commitment to students' well-being and learning through positive influence, professional judgment and empathy in practice.

justice, confidentiality, freedom, democracy and the environment.

Integrity

Honesty, reliability and moral action are embodied in the ethical standard of *Integrity*. Continual reflection assists members in exercising integrity in their professional commitments and responsibilities.

Trust

The ethical standard of *Trust* embodies fairness, openness and honesty. Members' professional relationships with students, colleagues, parents, guardians and the public are based on trust.

Respect

Intrinsic to the ethical standard of *Respect* are trust and fair-mindedness. Members honour human dignity, emotional wellness and cognitive development. In their professional practice, they model respect for spiritual and cultural values, social



The Standards of Practice for the Teaching Profession

The *Standards of Practice for the Teaching Profession* provide a framework of principles that describes the knowledge, skills and values inherent in Ontario's teaching profession. These standards articulate the goals and aspirations of the profession. These standards convey a collective vision of professionalism that guides the daily practices of members of the Ontario College of Teachers

The Purposes of the Standards of Practice for the Teaching Profession

- to inspire a shared vision for the teaching profession
- to identify the values, knowledge and skills that are distinctive to the teaching profession
- to guide the professional judgment and actions of the teaching profession
- to promote a common language that fosters an understanding of what it means to be a member of the teaching profession.

The Standards of Practice for the Teaching Profession are:

Commitment to Students and Student Learning

Members are dedicated in their care and commitment to students. They treat students equitably and with respect and are sensitive to factors that influence individual student learning. Members facilitate the development of students as contributing citizens of Canadian society.

Professional Knowledge

Members strive to be current in their professional knowledge and recognize its relationship to practice. They understand and reflect on student development, learning theory, pedagogy, curriculum, ethics, educational research and related policies and legislation to inform professional judgment in practice.

Professional Practice

Members apply professional knowledge and experience to promote student learning. They use appropriate pedagogy, assessment and evaluation, resources and technology in planning for and responding to the needs of individual students and learning communities. Members refine their professional practice through ongoing inquiry, dialogue and reflection.

Leadership in Learning Communities

Members promote and participate in the creation of collaborative, safe and supportive learning communities. They recognize their shared responsibilities and their leadership roles in order to facilitate student success. Members maintain and uphold the principles of the ethical standards in these learning communities.

Ongoing Professional Learning

Members recognize that a commitment to ongoing professional learning is integral to effective practice and to student learning. Professional practice and self-directed learning are informed by experience, research, collaboration and knowledge.



Appendix 2

Accessibility for Ontarians with Disabilities Act (AODA) Text:

Figure 1: Critical Pedagogical Stance from page 1 of this PDF

Figure 1 is graphic representation describing critical reflections. At the centre of the image is a Venn diagram of Policies, Practices and Processes. Surrounding this Venn diagram are critical inquiries related to these policies, practices and processes.

In terms of policies, reflections include:

- Who is privileged by this policy?
- Who is not privileged by this policy?
- How does the policy honour the rights of all involved?
- Who is involved in the development and implementation of policies?

In terms of practices, reflections include:

- What school level practices support inclusion?
- What might be barriers to particular practices?
- What actions help a school community to uncover “invisible barriers” to inclusive practices?
- What counts as knowledge?

In terms of processes, reflections include:

- Whose voices have been included in the process?
- Whose voices have not been included in the process?
- How are all learners accepted and included within the school community?
- How do we enable advocacy within all school processes?

Appendix 3

Accessibility for Ontarians with Disabilities Act (AODA) Text:

Figure 6: Instructional Design and Practices from page 23 of this PDF

Figure 6 is a graphic representation of the possible andragogical instructional processes implemented in Additional Qualification courses. At the centre is a Venn diagram. In the right side of the Venn diagram, candidates are invited to explore the use of Experiential Learning, Critical Action Research, Narrative, Reflection, Collaborative Learning and Self-directed projects. In the left side of the Venn Diagram, candidates are invited to explore the use of Case Methodologies, Pedagogical Documentation, Dialogue, Independent Study, Small group interaction and Inquiry. These inquiry-based learning experiences interconnect at the centre to form a multiplicity of multifaceted processes that can enhance professional practice. The inquiry-based learning experiences outlined in the Venn diagram are related to the following four areas: Pedagogy, Assessment and Evaluation, Instructional Design and Practices and Program Planning, which surround the Venn diagram in an outer circle.

Appendix 4

College Standards-Based Resources

Information pertaining to the following standards-based resources, which support learning through professional inquiry, is available through the [College web site](#).

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