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## 21st Century Learning Skills

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### Abstract

21<sup>st</sup> century, society has undergone an accelerating change in economy and technology. Its effects the demands on the educational system preparing students for the workforce, have been significant in several ways. This is part of a growing international movement focusing on the skills required for students to master in preparation for success in a rapidly changing, digital society. Many of these skills are also associated with deeper learning, which is based on mastering skills such as analytic reasoning, complex problem solving, and teamwork. Skills that enable people to be flexible and adaptable in different roles or in different fields, those that involve processing information and managing people more than manipulating equipment—in an office or a factory—are in greater demand. These are also referred to as "applied skills" or "soft skills", including personal, interpersonal, or learning-based skills, such as life skills (problem-solving behaviors), people skills, and social skills. Many of these skills are also identified as key qualities of progressive education, a pedagogical movement that began in the late nineteenth century and continues in various forms to the present.

**Keywords:** 21<sup>st</sup> Century learning skills, Learning-based skills, Critical-Thinking, Problem-solving, Analytical Thinking.

### Introduction

21<sup>st</sup> century learning skills comprise skills, abilities, and learning dispositions that have been identified as being required for success in 21<sup>st</sup> century society and workplaces by educators, business leaders, academics, and governmental agencies. This is part of a growing international movement focusing on the skills required for students to master in preparation for success in a rapidly changing, digital society. Many of these skills are also associated with deeper learning, which is based on mastering skills such as analytic reasoning, complex problem solving, and teamwork. These skills differ from traditional academic skills in that they are not primarily content knowledge-based.

During the latter decades of the 20<sup>th</sup> century and into the 21<sup>st</sup> century, society has undergone an accelerating change in economy and technology. Its effects the demands on the educational system preparing students for the workforce, have been significant in several ways. Beginning in the 1980s, government, educators, and major employers issued a series of reports identifying key skills and implementation strategies to steer students and workers towards meeting the demands of the changing workplace and society.

As western economies have transformed from industrial-based to service-based, trades and vocations have smaller roles. However, specific hard skills and mastery of particular skill sets, with a focus on digital literacy, are in increasingly high demand. People skills that involve interaction, collaboration, and managing others are increasingly important.

Skills that enable people to be flexible and adaptable in different roles or in different fields, those that involve processing information and managing people more than manipulating equipment—in an office or a factory—are in greater demand. These are also referred to as "applied skills" or "soft skills", including personal, interpersonal, or learning-based skills, such as life skills (problem-solving behaviors), people skills, and social skills.

- **Learning and innovation skills:** critical thinking and problem solving, communications and collaboration, creativity and innovation

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- **Digital literacy skills:** information literacy, media literacy, Information and communication technologies (ICT) literacy
- **Career and life skills:** flexibility and adaptability, initiative and self-direction, social and cross-cultural interaction, productivity and accountability

Many of these skills are also identified as key qualities of progressive education, a pedagogical movement that began in the late nineteenth century and continues in various forms to the present.

#### **Skills and Abilities**

- enthusiasm for learning
- deep understanding
- application of learning
- examination, inquiry, critical thinking and reasoning
- communication – write well, listen effectively, discuss intelligently, be proficient in a foreign language,
- cultural, social, and environmental - understanding and implications
- technology – understand the computer as an information, computation, and communication device, and the world of computers, electronics, and related technologies.
- diverse learning across a broad range - fine arts, performing arts, and vocational

In 21st century, education systems across the world focused on preparing their students to accumulate content and knowledge. As a result, schools focused on providing literacy and numeracy skills to their students, as these skills were perceived as necessary to gain content and knowledge. Recent developments in technology and telecommunication have made information and knowledge easily accessible in the 21st century. Therefore, while skills such as literacy and numeracy are still relevant and necessary, they are no longer sufficient. In order to respond to technological, demographic and socio-economic changes, education systems began to make the shift toward providing their students with a range of skills that relied not only on cognition but also on the interdependencies of cognitive, social, and emotional characteristics.

The skills and competencies that are generally considered "21st Century skills" are varied but share some common themes. They are based on the premise that effective learning, or deeper learning, a set of student educational outcomes including acquisition of robust core academic content, higher-order thinking skills, and learning dispositions. This pedagogy involves creating, working with others, analyzing, and presenting and sharing both the learning experience and the learned knowledge or wisdom, including to peers and mentors as well as teachers. This contrasts with more traditional learning methodology that involves learning by rote and regurgitating info/knowledge back to the teacher for a grade. The skills are geared towards students and workers to foster engagement; seeking, forging, and facilitating connections to knowledge, ideas, peers, instructors, and wider audiences; creating/producing; and presenting/publishing. The classification or grouping has been undertaken to encourage and promote pedagogies that facilitate deeper learning through both traditional instruction as well as active learning, project-based learning, problem-based

learning, and others.

#### **Common Core Skills**

The "application of knowledge through higher-order thinking skills." The initiative's stated goals are to promote the skills and concepts required for college and career readiness in multiple disciplines and life in the global economy. Skills identified for success in the areas of literacy and mathematics:

- cogent reasoning
- evidence collection
- critical-thinking, problem-solving, analytical thinking
- communication

#### **Fundamental Skills**

- ❖ **Basic Skills:** reads, writes, performs arithmetic and mathematical operations, listens and speaks.
- ❖ **Thinking Skills:** thinks creatively, makes decisions, solves problems, visualizes, knows how to learn, and reasons
- ❖ **Personal Qualities:** displays responsibility, self-esteem, sociability, self-management, and integrity and honesty

#### **Workplace Competencies**

- ✓ **Resources:** identifies, organizes, plans, and allocates resources
- ✓ **Interpersonal:** works with others (participates as member of a team, teaches others new skills, serves clients/customers, exercises leadership, negotiates, works with diversity)
- ✓ **Information:** acquires and uses information (acquires and evaluates, organizes and maintains, and interprets and communicates information; uses computers to process information)
- ✓ **Systems:** understands complex inter-relationships (understands systems, monitors and corrects performance, improves or designs systems)
- ✓ **Technology:** works with a variety of technologies (selects technology, applies technology to task, maintains and troubleshoots equipment)
- Core subjects.
- 21st century content.
- Learning and thinking skills.
- Information and communication technologies (ICT) literacy.
- Life skills.
- 21st century assessments.

#### **Critical Thinking and Problem Solving**

- Creativity and innovation
- Cross-cultural understanding
- Communications, information, and media literacy
- Computing and ICT literacy
- Career and learning self-reliance

#### **Information and Communication Technologies (Ict) Proficiencies**

- ❖ Cognitive proficiency
- ❖ Technical proficiency
- ❖ ICT proficiency

A person possessing these skills would be expected to perform these tasks for a particular set of information: access, manage, integrate, evaluate, create/publish/present. The emphasis is on proficiency with digital tools..

- ✓ Fluency in multiple media
- ✓ Active learning based on collectively seeking, sieving, and synthesizing experiences.
- ✓ Expression through non-linear, associational webs of representations.
- ✓ Co-design by teachers and students of personalized learning experiences.
- ✓ Sharing (communal bookmarking, photo/video sharing, social networking, writers' workshops/fanfiction)
- ✓ Thinking (blogs, podcasts, online discussion fora)
- ✓ Co-Creating (wikis/collaborative file creation, mashups/collective media creation, collaborative social change communities)

#### **Foundation Literacies**

- ❖ Literacy and numeracy
- ❖ Scientific literacy
- ❖ ICT literacy
- ❖ Financial literacy
- ❖ Cultural literacy
- ❖ Civic literacy

#### **Competencies**

- ✓ Critical thinking/problem solving
- ✓ Communication
- ✓ Collaboration
- ✓ Creativity

#### **Character Qualities**

- ✓ Initiative
- ✓ Persistence/grit
- ✓ Adaptability
- ✓ Curiosity
- ✓ Leadership
- ✓ Social and cultural awareness

#### **National Research Council**

In a paper titled 'Education for Life and Work: Developing Transferable Knowledge and Skills in the 21st Century' produced by the National Research Council of National Academies, the National Research defines 21st century skills, describes how the skills relate to each other and summarizes the evidence regarding 21st century skills.

As a first step toward describing "21st century skills," the National Research Council identified three domains of competence: cognitive, interpersonal, and intrapersonal while recognizing that the three domains while different, are intertwined in human development and learning. These three domains represent distinct facets of human thinking and build on previous efforts to identify and organize dimensions of human behaviour. The committee produced the following cluster of 21st century skills in the above-mentioned 3 domains.

#### **Cognitive Competencies**

- ❖ Cognitive processes and strategies: Critical thinking, problem solving, analysis, reasoning and argumentation, interpretation, decision-making, adaptive learning
- ❖ Knowledge: Information literacy, ICT literacy, oral and written communication, and active listening
- ❖ Creativity: Creativity and innovation

#### **Intrapersonal Competencies**

- Intellectual openness: Flexibility, adaptability, artistic and cultural appreciation, personal and social responsibility, appreciation for diversity, adaptability, continuous learning, intellectual interest and curiosity
- Work ethic/conscientiousness: Initiative, self-direction, responsibility, perseverance, grit, career orientation, ethics, integrity, citizenship
- Positive core self-evaluation: Self-monitoring, self-evaluation, self-reinforcement, physical and psychological health
  - Teamwork and collaboration: Communication, collaboration, cooperation, teamwork, coordination, interpersonal skills
  - Leadership: Responsibility, assertive communication, self-presentation, social influence with others

#### **Conclusion**

The designs of learning environments and curricula have been impacted by the initiatives and efforts to implement and support 21st century skills with a move away from the factory model school model and into a variety of different organizational models.<sup>[50][51]</sup> Hands-on learning and project-based learning have resulted in the development of programs and spaces such as STEM and makerspaces. Collaborative learning environments have fostered flexibility in furniture and classroom layout as well as differentiated spaces, such as small seminar rooms near classrooms. Literacy with, and access to, digital technology has impacted the design of furniture and fixed components as students and teachers use tablets, interactive whiteboards and interactive projectors. Classroom sizes have grown to accommodate a variety of furniture arrangements and grouping, many of which are less space-efficient than traditional configurations of desks in rows.

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