

## Editorial

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The theme of this special issue is “*Cultivating knowledge-creating competencies through socio-digital participation*”. Productive participation in the emerging innovation-driven knowledge-creation society, one that is oriented toward building a sustainable future, will require cultivation of sophisticated innovative competencies by all citizens and associated identities as potential creators of knowledge (Bereiter, 2002; Paavola, & Hakkarainen, 2014). Creativity, here, as connected to “knowledge creation”, always involves construction of types of artifacts and externalization. In order to facilitate knowledge-creating competencies, students of primary, secondary and higher education need to encounter with the complexity of the real-world, pursue various types of authentic activities, learn how to act and work effectively, individually or together with others, solving complex problems and creating new knowledge and media.

While information and communication technologies (ICTs) formerly required specialized and inflexible computer labs, ubiquitous mobile and wireless networks have changed the ecology on technology

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enhanced learning allowing any place any time access to diverse socio-digital instruments and applications. Moreover, knowledge-creating become accessible when students, their thoughts and interests, are taken seriously in conjunction with adequate teacher facilitation and support (Bereiter, 2002; Scardamalia, & Bereiter, 2006). Indeed, there is an urgent need to redesign school and educational institutions so as to make people, technologies and places coevolve for nurturing more flexible co-learning spaces in which local initiative plays a crucial role. In order to make a difference in educational practices, it is critical to bring students, teacher practitioners, and researchers in a closer interaction and collaboration, facilitating reciprocal learning. Researchers are called to support the renewal of teaching practices by applying and testing appropriate pedagogical approaches in connection with teachers, by recognizing their expertise and by gathering suggestions coming from real learning contexts. Guiding such extended pursuits of inquiry, on the other hand, require that teachers learn also to orchestrate extended knowledge-creation projects, as distinguished from the conventional focus on merely here-and-now situational interaction learning.

This special issue is devoted to understand the role that socio-digital technologies and associated practices of working creatively with knowledge and media can play in supporting the acquisition of “future” knowledge creating competencies.

In their article “Good Moves” in Knowledge-Creating Dialogue, Bereiter and Scardamalia examine importance of dialogue for idea-centered education for creating, building, and advancing knowledge. They have pioneered research on computer-supported collaborative learning. Many studies carried out in their tradition have focused on analyzing student-generated knowledge artifacts and knowledge building discourse aimed at collective improvement of students ideas. This paper outlines types of “good moves” in knowledge-building dialogue – that is, constructive dialogic actions that can contribute to advancing knowledge-building dialogue and associated goal of solving problems, resolving disagreements, generating innovations, or creating new concepts and conceptual structures. The focus of the discourse moves schema is on knowledge creation, with critical thinking entering as an important adjunct.

To have the flexibility to productively participate in a society awash with emerging and disruptive forms of knowledge creation and distribution, students need to be taught the skills to collaboratively develop their own criteria for evaluating the validity of information. To this aim, Clark describes a formative intervention, based on Vygotskian principles, in which students confront contradictions in their practice as a stimulus for their learning and development. A second stimulus is provided by the collaborative creation of a mediating conceptual artifact, a tool for accuracy and reliability of digital information, which is reformulated and applied. Using such artifacts to evaluate the accuracy and reliability of complex and problematic sources externalizes the generation of criteria. This process nurtures students' emerging identity as scientists through increasingly sophisticated decision making and metacognitive reflection, and motivates students to embed more sophisticated, reasoned judgments.

Lax and colleagues focus on collaborative assessments as tools to support socio-cognitive interactions that foster a shift from traditional educational models toward collective knowledge innovation networks. Their study illuminates relationships between pre/post-test assessment and social network core-periphery analytics, verified by content analysis, and demonstrates changes in positions/roles and the co-creation of ideas for translation to practice. The authors provide a model of new possibilities for collaborative assessment and educational design to facilitate a shift from learning, as an exclusively individual enterprise with external assessment, to the creation of a community with participants assuming agency for the emergence of relevant issues and authentic, meaningful problems, scaffolded by transformative assessments – integral to knowledge building and creation.

Hietajärvi and colleagues developed an inventory for assessing adolescents' socio-digital participation (SDP). The study was motivated by an observation that digital technologies are only minimally used at school whereas adolescents appear to be engaged in intensive friendship and interest-driven socio-digital participation outside of school. The investigation aimed at theoretically conceptualizing the components of socio-digital participation supported by data collected using a novel SPD-inventory as well as a semi-structured interview

–tool: social networking was conceptualized to be more likely to be friendship-driven, and, knowledge- and media-oriented as interest-driven; academic participation was conceptualized as a separate boundary-crossing dimension between autonomous and controlled study activities. The article concluded that cultivating novel pedagogical practices, the heterogeneity of socio-digital participation should be recognized: The educational system should deliberately facilitate students appropriating of advanced creative digital practices of working with knowledge and media.

Sansone, Bortolotti, & Buglass examined socio-digital participation from the perspective of the trialogical learning approach (TLA, Paavola, & Hakkarainen, 2014). They reflected on pedagogical cases where TLA-based activities were organized for developing the 21st century life skills. The TLA was described from teachers' perspectives across a range of pedagogic courses. The aim of the paper is to provide both a summary of reflections on current practices and recommendations for potential enhancements to the trialogical framework and its pedagogical application. After a description of the approach, the authors focus on the role of pedagogical scenarios in educational design and reflective practice and, specifically, the scenarios used by teachers involved in the European project KNORK who have implemented TLA in their courses.

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## **Editorial**

«Cultiver les compétences de création de la connaissance grâce à la participation socio-numérique» est une exigence essentielle pour les citoyens immergés dans la Société de la Connaissance et de l'innovation actuelle (Bereiter, 2002 ; Paavola, & Hakkarainen, 2014).

Promouvoir ces compétences sophistiquées exige un re-examen des pratiques éducatives à tous les niveaux, afin que les élèves de l'école primaire et du secondaire puissent faire l'expérience de la complexité du monde réel, développer différents types d'activités authentiques, apprendre à agir et travailler efficacement, individuellement ou avec autrui, résoudre des problèmes complexes et, pour finir, créer de nouveaux outils et des artefacts de connaissance.

En outre, il est nécessaire de considérer, d'une part, les possibilités offertes par les technologies modernes, qui ne sont plus confinées dans les laboratoires d'informatique mais apportent une connotation d'ubiquité qui permet la connexion, partout et à tout moment, à différents outils et applications socio-numériques.

D'autre part, la création de connaissance est possible lorsque les élèves, leurs pensées et leurs intérêts sont pris au sérieux dans un contexte qui fournit un soutien adéquat (Bereiter, 2002; Scardamalia, & Bereiter, 2006).

En ce sens, les institutions scolaires doivent innover afin de rendre les individus, les technologies et les lieux capables de co-évoluer et développer un espace de co-apprentissage plus flexible, dans lequel l'initiative locale peut jouer un rôle crucial.

Il est ainsi essentiel de créer des liens plus forts et concrets entre les étudiants, les enseignants et les chercheurs, en encourageant la collaboration et l'apprentissage mutuel.

Les chercheurs sont alors appelés à soutenir le renouvellement des pratiques éducatives, ce qui impliquent l'application et l'expérimentation des approches pédagogiques appropriées, tout en reconnaissant l'expérience des enseignants ainsi qu'en exhortant l'émergence de réflexions et suggestions à partir des contextes d'apprentissage réel.

En parallèle, les enseignants, de leur côté, devraient développer des connaissances et des compétences pour orchestrer les activités et

les itinéraires dans lesquels la création de connaissance est réelle et centrale.

L'objectif de ce numéro spécial est ainsi de comprendre comment les technologies socio- numériques et leurs pratiques éducatives peuvent favoriser l'acquisition des compétences essentielles pour l'innovation et la création de connaissances.

## **Editoriale**

“Coltivare le competenze di knowledge-creation attraverso la partecipazione socio-digitale” è un requisito essenziale per i cittadini immersi nell'attuale società della conoscenza e dell'innovazione (Bereiter, 2002; Paavola, & Hakkarainen, 2014). Promuovere tali sofisticate competenze richiede una rivisitazione delle pratiche educative a tutti i livelli, tali che gli studenti di istruzione primaria, secondaria e superiore possano incontrare la complessità del mondo reale, svolgere diversi tipi di attività autentiche, imparare come agire e lavorare in modo efficace, individualmente o insieme ad altri, risolvere problemi complessi e, infine, creare nuovi strumenti e artefatti di conoscenza. Inoltre, è necessario tenere in conto, da un lato, le possibilità offerte dalle moderne tecnologie, non più relegate in laboratori informatici, ma portatrici di un connotato di ubiquità che consente quella connessione, ovunque e in qualsiasi momento, a diversi strumenti e applicazioni socio-digitali. Dall'altro lato, la creazione di conoscenza è possibile quando gli studenti, i loro pensieri e interessi, sono presi sul serio in un contesto che offra adeguati supporti (Bereiter, 2002; Scardamalia, & Bereiter, 2006).

In questo senso, le istituzioni formative devono rinnovarsi in modo da rendere le persone, le tecnologie e i luoghi in grado di co-evolvere e coltivare spazi di co-learning più flessibili, in cui l'iniziativa locale svolga un ruolo cruciale.

A tal fine, è fondamentale creare connessioni forti e concrete tra studenti, insegnanti e ricercatori, promuovendo collaborazione e apprendimento reciproco. I ricercatori sono chiamati a sostenere il rinnovo delle pratiche educative mediante l'applicazione e la sperimentazione di approcci pedagogici adeguati, riconoscendo l'esperienza

degli insegnanti e sollecitando l'emergere di riflessioni e suggerimenti dai contesti reali di apprendimento. Allo stesso tempo e dal canto loro, gli insegnanti devono dotarsi di conoscenze e competenze tali da poter orchestrare attività e percorsi in cui la creazione di conoscenza sia reale e centrale.

Questo numero speciale è dedicato a comprendere come le tecnologie socio-digitali e le relative pratiche educative possono sostenere l'acquisizione di competenze centrali per l'innovazione e la creazione di conoscenza.

Il framework che, come editori, ci pare interessante proporre per meglio interpretare i diversi casi presentati in questo numero è costituito da una tabella a doppia entrata i cui valori sull'asse verticale sono dati dai contesti di apprendimento, molteplici e fluidi, e su quello orizzontale, dalle strategie con cui l'apprendimento significativo e profondo avviene, ossia dialogo e condivisione. È all'interno di questo sfondo che ci pare gli articoli possano essere letti come un quadro organico rappresentativo del complesso e articolato rapporto fra apprendimento e tecnologie.