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Editorial

A time of complexity: From teachers' training to students' skills in the knowledge driven XXI century

*Ilaria Bortolotti**

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For several years now, in the global educational panorama, the need to modify teaching and training practices has become increasingly urgent. Such practices need to be aligned with a technologically advanced knowledge society by means of effective methodologies and the use of both analogic and digital learning environments. In this context, educational practice reform should serve many aims: to enhance learners and equip them with key competencies to solve complex problems in an uncertain world; to work intentionally and successfully with others in different contexts; and to contribute to cultural development (Sansone et al., 2020).

These educational needs have become even clearer during the pandemic. Institutions all over the world had to hastily apply methods and use tools which at times were scarcely mastered by teachers, trainers, and students, with obviously poor results (Ritella & Sansone, 2020). In fact, the transition from a transmissive and traditional model to a participatory culture in which to exploit the potential of digital technology is not at all immediate. This transformation requires a change in the way training and education are conceived. Firstly, as a means to increase knowledge and cognitive skills, and secondly, as a

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change capable of encouraging educational modes of technology use and the development of skills focused on appropriate teaching, learning, and assessment methods.

In the case of educating our youngest learners and those who might be equally devoid of the desired digital wisdom (Prensky, 2009), teachers are requested to carefully and competently select and present the tools to be used. To facilitate this, teachers first need to understand these tools and then subsequently make students aware of the possible risks connected to technology misuse (Szymkowiak et al., 2021). With this in mind, the role of the teacher, their professional practices and training, their attitudes, perceptions, and experiences, are an increasing area of research interest (Tondeur et al., 2019).

Cacciamani and colleagues' research pointed out this limit in reference to the university Distance Education (DE), by analyzing the beliefs and opinions of university teachers, with the aim of understanding their willingness to maintain a DE model after the pandemic. In this paper, the authors refer to previous experiences with technology, teaching flexibility, and specific training received as impacting teachers' intentions to actively use technologies to enhance their teaching methods (Ertmer et al., 2006). In this sense, teachers' training – before entering the service and in-service – becomes key to them actively experimenting with methodologies and tools. In this direction, Peracaula-Bosch and Martinez describes a training experience on Computational Thinking (CT) aimed at future teachers to evaluate course efficacy. In doing so, the paper considers changes in the trainees' level, crucial to correctly structuring CT activities to be proposed to young students. On the other hand, Montalbetti and Orizio report another experience for future teachers. Here the focus is on self and peer-assessment practices within the broader framework of the *assessment for learning*. Participants' perceptions about the digitally mediated experience are explored to elicit reflection on its usefulness in an educational context.

The remaining two articles shift from teachers' training to students' learning and their use of digital technologies. Indeed, this represents a further key element for a participatory and technology mediated culture. Perini and colleagues start by providing a compre-

hensive overview of learners' skills related to the industry 4.0 world, in which they generate fruitful insights for both formal and vocational education. Their analysis is articulated into three levels of reference: individual worker (micro level), organization (meso level), and professional sector (macro level).

Everri and colleagues ends this issue with a preliminary analysis of the validity of the Brief Multicultural Version of the Test of Mobile Phone Dependence. Specifically designed to measure smartphone addiction, the authors analysis confirms the general reliability of this tool in the Italian context; therefore, it appears as a useful instrument for addiction prevention in educational contexts. Knowing and measuring this type of addiction is particularly interesting due to the massive use of smartphones in the generation of "always connected" adolescent students.

All these contributions highlight that teaching and learning are complex and multidimensional processes, which simultaneously involve different actors and factors; to effectively enter the digital, participatory, and skill centered modern culture, it is necessary to focus on all of these elements appropriately in educational contexts. This focus needs to be based on the results of international scientific debate, to which this issue of *Qwerty* contributes in a significant way.

Editoriale

Nel panorama educativo globale, da diversi anni assume sempre più rilevanza il bisogno di modificare la pratica didattica e formativa per renderla adeguata a una società della conoscenza sempre più avanzata in campo tecnologico, attraverso metodi e ambienti di apprendimento sia analogici che digitali efficaci ed efficienti.

In questo contesto, innovare le pratiche educative dovrebbe servire allo scopo generale di valorizzare i discenti e dotarli delle competenze chiave necessarie per risolvere problemi complessi in un mondo incerto, lavorare intenzionalmente e proficuamente con gli altri in diversi contesti e contribuire alla loro cultura (Sansone et al., 2020).

Questi bisogni educativi sono diventati ancora più chiari durante la pandemia: le istituzioni di tutto il mondo hanno dovuto applicare frettolosamente metodi e utilizzare strumenti che erano scarsamente padroneggiati da insegnanti, formatori e studenti, con risultati ovviamente scadenti (Ritella & Sansone, 2020). Infatti, il passaggio da un modello trasmissivo e tradizionale a una cultura partecipativa in cui sfruttare le potenzialità del digitale non è affatto immediato, ma passa necessariamente attraverso la formazione, mezzo attraverso cui accrescere le conoscenze e le competenze, nonché sperimentare praticamente nel contesto educativo strumenti digitali e metodi di insegnamento, apprendimento e valutazione fondati sulle competenze.

Ovviamente, soprattutto in relazione ai discenti più giovani che sono lontani dall'auspicata saggezza digitale (Prensky, 2009), agli insegnanti è richiesto di selezionare e presentare con cura e competenza gli strumenti da utilizzare, prima conoscendo e poi rendendo consapevoli gli studenti dei possibili rischi connessi al loro abuso (Szymkowiak et al., 2021).

Nell'insieme, queste riflessioni si traducono in un crescente interesse di ricerca intorno alla figura degli insegnanti, alle loro pratiche professionali e alla loro formazione, ma anche ai loro atteggiamenti, percezioni ed esperienze (Tondeur et al., 2019).

Come sappiamo, infatti, diversi aspetti incidono sulle intenzioni degli insegnanti di utilizzare attivamente le tecnologie per migliorare i propri metodi di insegnamento (Ertmer et al., 2006), tra cui percezioni personali, atteggiamenti ed esperienze. In questo senso, la formazione degli insegnanti – sia prima che dopo l'ingresso in classe – diventa il livello chiave per permettere di sperimentare attivamente metodologie e strumenti.

Il fine ultimo, alla luce di quanto detto in incipit, è rendere docenti e formatori competenti nell'applicare in modo flessibile una pratica didattica e formativa che faccia uso efficace ed efficiente di tutti gli strumenti digitali e non che la società ci mette a disposizione e in grado di sviluppare competenze utili nel XXI secolo nei discenti di tutte le età, altri attori fondamentali nel processo di “innovazione” e costruzione di una cultura partecipativa e tecnologicamente mediata.

Éditorial

Dans le paysage éducatif mondial, depuis plusieurs années, la nécessité de modifier les pratiques d'enseignement et de formation devient de plus en plus importante pour les adapter à une société de la connaissance de plus en plus avancée dans le domaine technologique, grâce à des méthodes et des environnements d'apprentissage efficaces et efficaces, tant analogiques que numériques.

Dans ce contexte, les pratiques éducatives innovantes devraient servir l'objectif général de responsabiliser les apprenants et de les doter des compétences clés nécessaires pour résoudre des problèmes complexes dans un monde incertain, travailler de manière ciblée et rentable avec d'autres dans différents contextes et contribuer à leur culture (Sansone et al., 2020).

Ces besoins éducatifs sont devenus encore plus évidents pendant la pandémie: les institutions du monde entier ont dû appliquer à la hâte des méthodes et des outils mal maîtrisés par les enseignants, les formateurs et les étudiants, avec des résultats manifestement médiocres (Ritella & Sansone, 2020). En effet, le passage d'un modèle transmissif et traditionnel à une culture participative dans laquelle exploiter le potentiel du numérique n'est en aucun cas immédiat, mais passe nécessairement par la formation, qui est un moyen d'accroître les connaissances et les compétences, ainsi que d'expérimenter pratiquement dans le contexte éducatif des outils et des méthodes d'enseignement, d'apprentissage et d'évaluation basés sur les compétences.

Évidemment, surtout en ce qui concerne les jeunes apprenants qui sont loin de la sagesse numérique souhaitée (Prensky, 2009), les enseignants sont tenus de sélectionner et de présenter avec soin et compétence les outils à utiliser, en connaissant d'abord puis en sensibilisant les élèves aux risques éventuels associés à leur mauvaise utilisation (Szymkowiak et al., 2021).

Prises ensemble, ces réflexions se traduisent par un intérêt de recherche croissant autour de la figure des enseignants, de leurs pratiques professionnelles et de leur formation, mais aussi de leurs attitudes, perceptions et expériences (Tondeur et al., 2019).

Comme nous le savons, plusieurs aspects affectent les intentions des enseignants d'utiliser activement les technologies pour améliorer

leurs méthodes d'enseignement (Ertmer et al., 2006), y compris les perceptions, les attitudes et les expériences personnelles. En ce sens, la formation des enseignants – à la fois avant et après l'entrée en classe – devient le niveau clé pour leur permettre d'expérimenter activement des méthodologies et des outils.

L'objectif ultime, à la lumière de ce qui a été dit dans l'incipit, est de rendre les enseignants et les formateurs compétents pour appliquer de manière flexible une pratique didactique et de formation utilisant de manière efficace et efficiente tous les outils numériques et non numériques que la société met à notre disposition et capable de développer des compétences utiles au 21ème siècle chez les apprenants de tous âges, autres acteurs clés du processus d'“innovation” et de construction d'une culture participative et médiatisée par la technologie.

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