Global Educational Research Journal: ISSN-2360-7963: Vol. 2(8): pp 103-110, September, 2014.

Full Length Research Paper

Upper formal learning and technology

Jozef Bushati, Adriana Galvani, Gezim Dibra and Mimoza Priku

Corresponding Author E-mail: jozefbushati@gmail.com

Accepted 24th July, 2014

Teaching models are traditionally based on passive learning processes. This can be a risk, because people are living in the "information-everywhere society", where they are bombed by information after a simple *Googling-click* and could be more influenced by media, whatever they are. In this changeable society, education cannot be merely technocratic, but it should encompass ethical goals, built upon individual and social needs, in order to shape the learning process on personalized frames. An investment just on technologies, like tablets or other electronic tools, doesn't seem adequate to develop 21st century skills, such as critical thinking, original evaluation, horizontal connections, longitudinal deepening, dividing views and news, communicating knowledge, principles and interpretations. Innovation in education occurs when a technological revolution endorses the increase of human capital. This should be considered as the main goal for educational institutions, whatever the technology and the historical moment. Technological progress raises the demand for skills, but poor human capital investments slake that demand. n the modern period economic growth requires educated workers, managers, entrepreneurs, and citizens, so that modern technology must not only be put in place, but maintained, innovated and invented. Certain types of human capitals are particularly useful when combined with the most advanced technologies to create productive uses of new technologies. The contribution of human capital to growth crucially depends on the set of tasks in use, if they reciprocally interact. In order to empower intangible human capital, learning doesn't derive only from a formal, traditional way of teaching, but also from the outside world, in informal and not formal way. This paper will enlarge the perspectives of education which are on the way to enter in the modern system. This analysis is applied to the "sovra-formal" way of teaching and learning. It is a modality permitted by a rich knowledge technology, but also by expertise and available tools in specialized labs where the greatest and impending phenomena are studied. With new tools and perspectives, scholars and pupils can find the sublimation of the didactic experience. This generates a new function for education: to build a personal awareness which can give sense to the experiences. In times of pressured public budgets, several countries face challenges to maintain or improve the quality of learning with few resources. For this reason, funds must be allocated to teacher training, in order to obtain the maximum through intangible assets, embedding older learning traditions in current highly-connected environments. Schools must accept the responsibility to grant inclusion and to promote a cognitive self-development or cognitive flexibility. This empowers intangible human capital.

Keywords: Innovation, technologies, higher education, human capital, values.

INTRODUCTION

The Greco-Roman era, fostered by thinkers like Aristotle, conceived education as an endeavour towards personal and community (*polis*) fulfilment. In that period, education was not defined by economic productivity or technical competence (Hughes, 2001). For Aristotle, it was a "personal fulfilment and realising potential in respect of developing the natural capacities to be well and do well which made possible human flourishing" (Cockerill, 2014, 17). This approach was replaced by the Enlightenment where technical expertise became "a prevailing value in education, resulting in the dominance of schooling as an instrument for economic production which prepared the learner with appropriate instrumental skills" (*ibidem*).

Technical expertise should be now re-interpreted and re-discussed in the modern educational frame, because,

Table 1: Access to computers and the Internet at home.

	Access to the Internet	Access to computer		Access to the Internet	Access to computer
Iceland	92,0	**93,1**	France	73,6	**76,4**
Netherlands	90,9	**92,0**	Austria	72,9	**76,2**
Norway	89,8	**90,9**	Israel[1]	66,3	**74,4**
Luxembourg	90,3	**90,2**	Average	69,8	**73,9**
Sweden	88,3	**89,5**	Slovak Republic	67,5	**72,2**
Denmark	86,1	**88,0**	Slovenia	68,1	**70,5**
Germany	82,5	**85,7**	Estonia	67,8	**69,2**
Japan[1]	67,1	**83,4**	Poland	63,4	**69,0**
United Kingdom	79,6	**82,6**	Spain	59,1	**68,7**
Finland	80,5	**82,0**	Hungary	60,5	**66,4**
Korea	96,8	**81,8**	Italy	59,0	**64,8**
Canada[1]	77,8	**81,7**	Czech Republic	60,5	**64,1**
Switzerland[2]	77,0	**81,4**	Portugal	53,7	**59,5**
New Zealand[1]	75,0	**80,0**	Greece	46,4	**53,4**
Australia[2]	72,0	**78,0**	Turkey	41,6	**44,2**
United States	71,1	**77,0**	Chile[1]	30,0	**43,9**
Belgium	72,7	**76,7**	Mexico	22,3	**29,9**
Ireland	71,7	**76,5**			

Source: OECD, 2011

in spite of a fickle and evolving society, “the essential goal of education is the mastery of *established* knowledge, yielding great technical competence in dealing with tasks that are more or less *standard*” (Wolff *et al.*, 2014, 17; my emphasis). Hence, it can't be taken for granted that technology-based approaches ensure positive educational outcomes that perfectly match labour market demands, now oriented towards *non-standard* competences (Autor and Brendan, 2013). This could be a controversial point, because according to Wolff (*et al.* 2014) and Bowen, (2013), technology-based innovations in education would increase classroom efficiency and would not be a threat to the quality of teaching. In this view, it is possible to constrain the rising costs of education without damaging its quality. However, such important matters cannot be hastily settled, since technology-in-learning should not only be analyzed through the perspective of educational costs (Bureau of Labor Statistics, 2009; Immerwahr *et al.*, 2009; Baumol, 2012), but also in terms of educational failures.

Consistent with this view, Sirpa Tani, in her *lectio magistralis,* hosted at the closing ceremony of EUROGEO 2013 in Bruges, presented the schematization of different kind of learning which reflects the variety of modern life and technology. Tani explained that education cannot be only made in school or in a *formal* way of teaching. This old formal schooling, whose main features are whole-class teaching and poor personalization, has been always based just on discipline, order, and obedience. Nevertheless, students' curricula are changing, since citizens are living in “an information everywhere society” (Ting, 2011) where they are bombed by information after a “Googling-click” (*ibidem*), so that they are becoming *netizens*. As stated in table 1, in certain countries the web is more and more accessible, relevant and ubiquitous in *netizens*' lives, so that Internet governance must now include more than mere Internet naming or addressing. According to the Tunis Agenda, there are other significant social issues, such as “critical Internet resources, the security and safety of the Internet, and developmental aspects and issues, pertaining to the use of the Internet” (UN, 2005, 58) Table 1.

In this changeable information-society, the autocratic model of education seems to keep on being untouched and the simple introduction and use of tablets or other electronic tools cannot be taken as a guarantee of innovative learning, able to face net-society's challenges. In fact, the *easy-click* information is a risk for gullible minds if school doesn't promote “horizontal connectedness across activities and subjects, in and out of the school” (OECD, 2013, 188). Education cannot be simply technocratic; teachers must be aware of their goals, built upon individual and social demands, in order to shape the learning process on micro and macro social frames (Brofenbrenner, 1986), without reflections on psychological resources to deal with difficult issues in life” (Cockerill, 2014, 16). In fact, the *easy-click* can addict students to gather quick answers for responding to the *formal* questions asked by the system. However, the web is not an always-answering oracle and students must also learn from the *outside* world (Tani, 2013; OECD, 2013) in informal way.

Upper-formal method

For this reason, this research is finalized to investigate

the *upper-formal* way of teaching and learning, which avoids the stereotyped schooling models, but also the technical-confident models. The upper-formal model is permitted by rich knowledge in technology, but also by expertise and available tools in specialised labs where the greatest and impending phenomena are studied. In this view, learning and teaching are considered as complementary, so that scholars and pupils can find the sublimation of the didactic experience.

This model is active, voluntary and focused on the mutual relations and suggests that learning is both knowledge acquisition and natural process through which everyone can pursue meaningful goals. It is a process of discovery which allows to build meanings deriving from any kind of information and experience, filtered by individual perceptions, thoughts and emotions (American Psychological Association; cited in Palumbo, 2012).

The upper-formal learning/teaching processes should allow teachers to develop their critical thinking and to create trans-disciplinary learning strategies which are focused on:

- building argumentation
- making critical evaluation
- dividing views and news
- communicating knowledge, principles and interpretations.

upper-formal strategies should triggers learning outcomes such as:

- creativity and original evaluation
- communication
- collaboration
- critical thinking and horizontal connections
- problem solving.

These are the 21st century skills considered essential by OECD (2012); highly required by labour markets. European Parliament (2006) has defined a skill the "proven ability to individually use knowledge and expertise in work or study frames and in personal or professional development". In order to build them, educational system can exploit technologies, but the real focus must be on human capital. In fact, in this race between education and technology, human capital keeps on being considered the central determinant of economic growth (OECD, 2013).

An efficient educational system should align the activity of human capital generation with the demands and "problems of the productive sector of economy" (UNCTAD, 2011, 8), in order to trigger an inclusive and sustainable economic growth. However, education cannot be conceived just for economic development, but it must require other kinds of knowledge "which defies obtuseness in individuals and society, enhancing practical reasoning, authentic dialogue, or a cultivated and developed sympathy" (Cockerill, 2014, 15). The tendency to narrow technical and economical perspectives in education and a culture of *performativity* (Pring, 2005), in which "economic productivity often drives education practice, has been criticized by educationists for many years" (Cockerill, 2014, 15). The term *performativity* describes a kind of education, where the values of learning-functions have replaced "concerns of justification or rights in education, owing to the triumph of technocratic reason" (Lyotard, 1979; quoted in Hogan, 2000, 378–379). Concerns arise when education is driven only by economic productivity, given its tendency to promote a "mentality of *technicity*" (Hogan, 2000) exasperated by the language of *managerialism* (Pring, 2005). If schools consider students mere customers of technical skills, they miss essential elements of their development which prepares them for labour market and social life. These elements include: "sparking curiosity about the world and people around them; thinking passionately, creatively and critically in a reflective manner about difficult issues with no obvious answer; learning to manage risk, being resilient and valuing interdependence; paying attention to the past, present, and future; participating in caring for one another and the world beyond their own setting; and, developing moral seriousness, commitment and a vision of what is good" (Cockerill, 2014, 15). Upper-formal method avoids *performativity* and *technicity;* it stirs students up to interpret by themselves *all* the world around them, accurately and in a balanced manner. Hence, upper-formal method supplies a new function for schools: to build personal awareness which can give positive sense to the experiences. In order to make students aware of their behaviour, motivation and cognition, great attention should be paid on diagnosing and monitoring the learning process, setting learning goals, choosing and executing learning activities, and evaluating results (Bolhuis and Voeten, 2001; Jossberger, 2011; Kuo, 2010).

Education and technology in upper-formal learning

Innovation can be generated by "science-based technological progress, or from the acquisition, adaptation and diffusion of existing technological knowledge. It can also result from entrepreneurial activity leading to new, more efficient combinations of productive resources" (UNCTAD, 2011, 6). Whatever the sources can be, it is commonly assumed that innovation is "essential to achieve the goals the international community has set for itself in terms of sustainable development in every possible dimension of this concept: social, cultural, environmental and economic" (UNCTAD, 2013, 3). However, today daily life and work require more than mere technical skills or simple content knowledge (Autor and Brendan, 2013). In fact, the current debate points out that "a holistic approach to promote innovation through the inclusion of aspects, such as technology transfer, linkages between research institutions, business and government, human capital development" (UNCTAD, 2013, 8), is required to ensure

the success of the efforts made to improve educational strategies. The ability to manage complex life and work environments in this competitive information-age calls for people "to attend rigorously to the development of essential skills, such as initiative, critical thinking, and self-regulation" (Partnership for 21st Century Skills, 2009). An investment just on technologies "to achieve efficient transfer of the outcomes of R&D to the commercial sector" (UNCTAD, 2011, 7) doesn't seem adequate to fully acquire 21st century skills, which are not easily transferable. This is a simplistic linear approach to innovation in educational strategy that must be rejected. In fact, effective innovation in education can carry out positive outcomes only if technological revolution endorses an increase of human capital (OECD, 2013; UNCTAD, 2013), whatever the technology and the historical moment.

Economic growth and technological progress raises the demand for skills, but poor human capital investments slake that demand. In this period skill-intensive profiles of workers, managers, entrepreneurs, and citizens (Cedefop, 2012) are highly required, so that schools must not only put technology in place, but maintain, innovate and invent it. Certain types of human capitals are developed over time, through practice and interactions in specific environments and are particularly useful if combined with the most advanced technologies to create productive uses of them. Nevertheless, it must be admitted that human capital cannot be improved "simply by buying equipment or receiving a set of operational instructions" (UNCTAD, 2011, 8).

The effectiveness of an innovative educational system is defined by how it triggers and supports flourishing learning-interactions that generate technological absorptive capacity. This can help students to develop their own human capital and skills "by making them jointly responsible with the teacher for their learning and actively involving them in learning activities" (van Beek *et al.*, 2014, 1). It is commonly accepted that if students are actively involved in learning activities, it is more likely that their learning will be meaningful (Aldridge *et al.*, 2012). Hence, the first step to accomplish should be an investment on innovative teaching models. In fact, the teacher, as a component of the innovative learning environment, has a crucial role in stimulating students and developing upper-formal learning process (cfr. Hattie, 2009; Kuo, 2010; Reeve, 2009). A teaching model that empowers upper-formal learning can be referred to as "process-oriented teaching" (Vermunt, 1994). This implies that "the external control of the learning process by teachers gradually shifts to an internal control over the learning process made by the students themselves" (van Beek et al., 2014, 2). According to Bereiter and Scardamalia (1989, and Biggs, 1996), there are differences between the extent to which there is *strong*, *shared* or *loose* teacher control. Boekaerts and Simons (1995) distinguish three educational regimes in which learning functions could be performed either by the teacher and/or the student:

External learning: teacher has a strong control and regulates all learning functions. The teacher determines the student's learning process by undertaking explicit educational activities. In fact, teacher's practices are focused on instructing, telling, indicating and specifying. The technologies, if used, are passively exploited by the students, who follow teacher's guidelines to gather information through an easy-click.

Shared learning: teacher and students are both involved in the design and performance of the learning process. The teacher stimulates students to learn actively and refers to the learning activities just as a model. Through assignments, questions, technologies and study tasks, the students are stimulated to comprehend, integrate and apply by themselves.

Internal learning: students choose their own learning activities and carry out the main component of the learning functions. The students internally regulate their learning when they specify their own goals and don't need guidelines from others to choose a learning strategy (Boekaerts, 1999) or the best technical tool to obtain their purpose. The teacher has a loose control and stimulates the students to use their knowledge and skills to regulate their own learning. This triggers "the generation of endogenous technological capacities" (UNCTAD, 2011, 9).

It must be pointed out that "teachers do not teach in one way or another but seem to combine different approaches" (van Beek *et al.*, 2014, 7). The teaching practice is commonly featured by a mix of external, shared and internal learning (*ibidem*), so that traditional direct instruction is melted with stimulating, probing and self-managed learning, to improve human capital. Put in these terms, learning functions are *psychological* functions performed during the learning process (Shuell, 1988). Among these psychological functions, personal motivation is highly relevant because it affects the learning process (OECD, 2013) and "stirs us up to face or avoid tasks. It is an internal/external pushing that promote the desire to get involved in studying" (Lucangeli, 2012, 238; my translation). Through motivating the student's involvement "in learning, engaging the symbolic communication, predicting their transformation and developing their skills and competences, the school promotes the conditions of humanization of a young person and finds a place for everyone in local culture, also by promoting relationships and coexistence in public spaces" (Munteanu, 2014, 246). Moè and Lucangeli (2010) point out that there would be two different approaches to motivate a learning process, which trigger two different kind of human capital. As stated by Table 2, an external motivation generates a Performer, the internal one trigger a Manager:

These two kinds of motivation co-exist inside every

Table 2: Kinds of human capital connected to student's goals

Human Capital	Features of Motivation
Performer	Getting positive marks
Manager	Personal improvement, through the acquisition of new knowledge

Table 3: Features of student's profiles. Elaboration of: Moè and Lucangeli 2010

Natural Born Skilled: Performer	Life Long Skilled: Manager
To demonstrate one's own ability	To increase one's own ability
Motivation: to get good marks	Motivation: to get improvement and new knowledge
Performance for the others	Management for oneself
Naive Tech Exploitation	Deep Tech Exploitation

student and affect personal human capital development. When there are conditions of maximal external learning, students' managerial skills develop minimally (Boekaerts, 1999) and performer profile is strengthening up.

Performer and manager profiles

Education and Technology in upper-formal learning can trigger two different profiles, as summed up in table 3:

The Performers are students who consider the skills like “innate” (Dweck, 2000, 242), and avoid every situation which could drive to underachievement, because they regard every exam as a test for their own abilities. The fear due to unsuccessful marks closes down the learning process. All the efforts are only performed to get “positive evaluations from the teacher” (*ibidem*): horizontal connections, critical thinking and creativity are not considered important. Performer doesn't seem able to get opportunities deriving from outside the school, because these are not immediately assessed. For this profile, human capital is connected to marks, which are considered as the only important thing. The tasks derive from inside the school, but the motivation raises from outside (please the teachers). Technologies are just something to gather information through the easy-click process.

The Managers think that personal skills can be changed, and are aware that improvement is possible and face up to learning challenges with more wilfulness (Lucangeli, 2012, 248), because they are not afraid of mistakes. Their goal is to increase personal knowledge and to positively manage work or study situations. Managers can adopt an “enterprising behaviour” (Gibb, 2002). This kind of human capital is of relevance for modern career concepts such as the boundary-less career, the post-corporate career, and employability (van Gelderen *et al.*, 2008) that emphasises flexibility and different possibilities to cope in current labour market.

Manager put any kind of stimulus into the learning process, even those from outside, because human capital is something to be enriched for personal goals. The tasks derive from outside the school, the motivation from inside (to please oneself). Students feel to have control of something, and this increase the self-confidence, so that technologies can be exploited to connect different subjects in original ways.

Manager can develop a positive study method, featured by “the ability to organize one's work, make targeted and selective choices, use of strategies and instruments appropriate to the performance demands and to the required context of knowledge” (Pacifico et al., 2012, 14).

According to Watts (2009), access, quality, cooperation and coordination are required to develop Manager skills. In the upper-formal method, these concepts can be defined as follows:

Access: to know where an information can be obtained; to exploit web searching technologies.

Quality: to elaborate information in personal and creative ways, beyond a simple copy-and-past.

Co-operation and co-ordination: to exploit several sources; to work in a team; to connect horizontal links.

The value of these three issues stays not in each one isolated from the others. In fact, it is very easy to get an access to information through smart-phones or tablets, but it is not enough to build a positive learning process. “Where can I gather this information?” is as important question as “What can I do with it?”, “How can I exploit it?”, “What does it means?” and “What is its effect?”. In this view, the Manager-student with a tablet is “active, autonomous and responsible of learning process which is not a mere transfer of information as a content to be memorized, but it also means learning how to learn. This means that the student can embed the information in a

personal way into a wider frame" (Spezzano, 2012, 9; my translation).

CONCLUSION: ALL-INCLUSIVE SCHOOL

The information-everywhere society is now facing an economic development which involves a process of structural transformation whose main elements are technological learning and innovation. Technological innovation should be now considered as "a broad notion that includes not only the introduction of products, marketing methods, organizational forms or productive processes that renew to the world" (UNCTAD, 2011, 6), but also the schools' implementation of technologies that are already available elsewhere. Without technological innovation, "productivity growth stalls and long-term income and welfare improvements become impossible" (UNCTAD, 2011, 6) and the educational system "cannot be expanded or diversified and potential growth in employment is lost" (*ibidem*).

Despite technological innovation in society, social science research points out the paradox that "at the pinnacle of human material and technical achievement, we find ourselves anxiety-ridden, prone to depression, worried about how others see us, unsure of our friendships, driven to consume and with little or no community life" (Wilkinson and Pickett, 2009, 3). This negative outcome derives from an innovation policy for development which is "fundamentally concerned not with the generation of new knowledge but with jump-starting, fuelling and managing a process of learning, and with creating and developing the competences and capabilities that are required at various levels for such technological learning and catch-up to succeed" (UNCTAD, 2011, 9). The lives of students are therefore affected by a worrying rise in mental health issues (Layard and Dunn, 2009; UNICEF, 2007; WHO, 2010), further aggravated "by a culture of *performativity"* (Cockerill, 2014, 15) deriving from those innovative learning-strategies which are focused only on technology and not on human capital development.

According to Nykiel-Herbert (2004), van Beek (*et al.*, 2014), teachers are expected to fully transform students in autonomous and emotional independent citizens and to highly motivate them in their learning process (Paris and Winograd, 2001).

In times of pressured public budgets, several countries face challenges to maintain or improve the quality of teaching and learning with few resources. For this reasons, more funds must be allocated to teacher training in order to obtain the maximum through intangible assets, embedding older learning traditions in current highly-connected environments. New technologies can promote "experiential learning, stimulate the students' interrogative spirits and combine the independent work within the students' work group" ((Munteanu *et al.*, 2014, 249). However, mere investments in electronic tools isn't a proper way to empower their competences to face society's challenges. In fact, the wider and wider access to technological media and communication, is triggering "stronger media influences towards consumerism and individualism as the solution to well-being" (Cockerill, 2014, 16) so that students are reduced to mere customers of technical skills. Furthermore, "the new face of friendship is marked by virtual methods of relating through digital technology which require great sophistication, critical reflection, and deliberated action and trust" (*ibidem*). It can be argued that "something radical has emerged in the last few years affecting how young people communicate with and relate to their friends and acquaintances, through My-Space or Facebook" (Nuffield Review, 2009, 74; cited in Pring, 2009). Beyond the media and digital communication, the increasing cultural mix which students face in society, compels them to manage various cultures and beliefs, in order to avoid conflict, to communicate effectively and to live co-operatively. The challenges faced by students are great and require school settings for making a difference in society. Students should have space and time during the day "to ask, discuss, and seek answers to important questions in society, and that they are supported and given the tools and structures to do so effectively, individually and as a group" (Cockerill, 2014, 16). In order to obtain this outcome, students must be engaged in a sovra-(or upper) formal process of critical reflection and meaningful dialogue as an integral part of their learning (Nussbaum, 1997). Throughout this process, students can learn to: "comprehend, as they read and understand rather than simply decode text; work with others and individually make predictions; test their hypothesis personally and in groups; analyse their findings and reflect on their conclusions towards further learning. However, this process should not be reduced to a mechanistic approach" (Cockerill, 2014, 16).

The upper-formal method generates learning communities where reflections and actions are reviewed, and peer learning has been shown to help students understand their learning effectively (Higgins et al., 2011; Tymms et al., 2011). Studies conducted into structured kinds of co-operative learning (Thurston et al., 2010; Tolmie et al., 2010) have also shown increases in social *inclusion* with students reporting they know their peers more deeply and have a greater number of friends. In a recent speech hosted by OECD, Briggs talked about inclusion and declared that in such a skill-intensive society, "it's not just that growth wants to be inclusive, it's actually more economically sustainable" (OECD, 2014). According to him, "we've thought of inclusion too narrowly" (*ibidem*), focusing just on economic aspects. A possible way to widen up the inclusion-issue beyond economic perspective can be an educational strategy organized along three main axes: "(a) human resources development; (b) supporting investment in learning and innovation; and (c) stimulating the emergence of linkages

among firms and with universities, research institutions and technologies intermediaries" (UNCTAD, 2011, 9). The school deriving from this strategy can strengthen absorptive capacity and give a contribution to sustainable development, because it accepts the responsibility to grant inclusion and to promote a cognitive self-development or cognitive flexibility. It is affected by a social frame which include "several and diversified stimulus, considered as informal and not-formal learning-sources.

REFERENCES

Autor, David H, Brendan M Price (2013). The Changing Task Composition of the Labour Market: An Update of Autor, Levy, and Murnane (2003), MIT Mimeograph, June

AA.VV. (2010), Studi e documenti degli annali della Pubblica Istruzione. Alla scuola compete...competere?, Le Monnier

AA.VV. (2011), Studi e documenti 134-135 degli annali della Pubblica Istruzione. Piano Nazionale Orientamento. Risorsa per l'innovazione e per il governo della complessità, Le Monnier

Aldridge JM, Fraser BJ, Bell L, Dorman J (2012). Using a new learning environment questionnaire for reflection in teacher action research, Journal of Science Teacher Education, 23(3), pp. 259-290

Baumol W, de Ferranti D, Malach M, Pablos-Mendez A, Tabish H, Wu LG (2012). The cost disease. New Haven: Yale University Press

Bereiter C, Scardamalia M (1989), International learning as a goal of instruction. In L. B. Resnick (Ed.), Knowing, learning and instruction, Essays in honor of Robert Glaser, pp. 361-392, Hillsdale, NJ: Erlbaum

Boekaerts M (1999). Self-regulated learning, International Journal of Educational Research, 31(6), pp. 445-551

Boekaerts M, Simons PRJ (1995). Leren en instructie. Psychologie van de leerling en het leerproces. Assen: Van Gorcum.

Bolhuis S, Voeten MJM (2001). Toward self-directed learning in secondary schools: what do teachers do? Teaching and Teacher Education, 17(7), pp. 837-855.

Bowen W (2013). Higher education in the digital age, Princeton: Princeton University Press.

Brofenbrenner, U. (1986), Ecologia dello sviluppo umano, Bologna, Il Mulino

Bureau of Labor Statistics. (2009), Productivity change in the nonfarm business sector, 1947–2008.

Cedefop (2012), Future skills supply and demand in Europe, Forecast 2012

Cockerill MP (2014). Beyond education for economic productivity alone: The Capabilities Approach, International Journal of Educational Research 66 pp. 13–21

Dweck CS (2000), Teorie del sé. Intelligenza, motivazione, personalità e sviluppo, Erickson, Trento

European Parliament (2006), Raccomandazione del Parlamento europeo e del Consiglio, 18 dicembre 2006, relativa a competenze chiave per l'apprendimento permanente

Gibb A (2002), In pursuit of a new `enterprise' and `entrepreneurship' paradigm for learning: creative destruction, new values, new ways of doing things and new combinations of knowledge. In International Journal of Management Reviews, 4(3), 233–269. http://dx.doi.org/10.1111/1468-2370.00086

Hattie J (2009), Visible learning: A synthesis of over 800 meta-analyses relating to achievement, Abingdon: Routledge

Higgins S, Kokotsaki D, Coe R (2011). Tool kit of strategies to improve learning: Summary for schools spending the pupil premium http://www.suttontrust.com/ research/toolkit-of-strategies-to-improve-learning/

Hogan P (2000). Virtue, vice and vacancy in educational policy and practice, British Journal of Educational Studies,48(4), 371–390, Taylor and Francis Limited

Immerwahr J, Johnson J (2009), Squeeze play 2009: The public's views on college costs today. San Jose: National Center for Public Policy and Higher Education. http://www.highereducation.org/reports/squeeze_ play_09/index.shtml.

Jossberger H (2011). Toward self-regulated learning in vocational education: Difficulties and opportunities (Dissertation)

Kuo Y (2010). Self-regulated learning: From theory to practice. Online submission. ERIC http://www.eric.ed.gov/ERICWebPortal/search/detailmini.jsp?_nfpb¼true&_&ERICExtSearch_SearchValue_0¼ED510995&ERICExtSearch_SearchType_0¼no&accno¼ED510995

Lucangeli D (2012), Orientamento formativo ed educazione affettivo-emozionale a sostegno dell'interesse e della motivazione dello studente: è possibile insegnare a "voler apprendere"?, in Annali della pubblica amministrazione, Metodo di Studio e capacità critica, 2012, Le Monnier pp. 237-246

Moè A, Lucangeli D (2010). Difficoltà in matematica e motivazione, in Lucangeli, D. e Mammarella, I. (eds.), Psicologia della cognizione numerica, Franco Angeli, Milano, pp. 207-235

Munteanu LH, Gorghiu G, Gorghiu LM (2014). The Role of New Technologies for Enhancing Teaching and Learning in Arts Education, in Procedia - Social and Behavioral Sciences 122, pp. 245 – 249. Published by Elsevier Ltd.

Nykiel-Herbert, B. (2004), Mis-constructing knowledge: the case of learner-centred pedagogy in South Africa. Prospects: Quarterly Review of Comparative Education, 34(3), pp. 249-265.

Nussbaum, M.C. (1997), Cultivating humanity: A classical defense of reform in liberal education, Harvard University Press

OECD (2011), ICT database and Eurostat, Community Survey on ICT usage in households and by individuals, November 2011

OECD (2012), Better Skills Better Jobs Better Lives, available on: http://skills.oecd.org/

OECD (2013), Innovative Learning Environments DOI:10.1787/9789264203488-en

OECD (2014), OECD Forum Inclusive Societies. Available on: http://webcastcdn.viewontv.com/client/oecd/forum2014/

Pacifico, M., Spezzano, C., Timpanaro, G. (2012), Il Progetto "Metodo di studio e capacità critica", in Annali della pubblica amministrazione, Metodo di Studio e capacità critica, 11-17, 2012, Le Monnier

Pacifico, M., Spezzano, C., Ting, Y.L.T. (2012), Muoversi verso una nazione che pensa criticamente, in in Annali della pubblica amministrazione, Metodo di Studio e capacità critica, 21-122, 2012, Le Monnier.

Palumbo C. (2012), Introduzione, in Annali della pubblica amministrazione, Metodo di Studio e capacità critica, 3-4, 2012, Le Monnier

Paris SG, Winograd P (2001), The role of self-regulated learning in contextual teaching: Principals and practices for teacher preparation (CIERA archive #01-03).

Partnership for 21st Century Skills, (2009, December), Framework for 21st century learning, Retrieved June 2012: http://www.p21.org/storage/documents/P21_Framework.pdf.

Pring R (2005), Philosophy of education: Aims, theory, common sense and research, Continuum.

Reeve J (2009), Why teachers adopt a controlling motivating style toward students and how they can become more autonomy supportive, Educational Psychologist, 44(3), pp. 159-175.

Shuell TJ (1988), The role of the student in learning from instruction, Contemporary Educational Psychology, 13(3), 276-295

Spezzano C (2012), Le ragioni del progetto "Metodo di studio e capacità critica", in Annali della pubblica amministrazione, Metodo di Studio e capacità critica, 7-9, 2012, Le Monnier

Thurston, A., Topping, K.J., Tolmie, A.K., Christie, D., Karagiannidou, E., Murray, P.(2010), Cooperative learning in science: Follow-up from primary to high school. In International Journal of Science Education, 32(4), pp. 501–522.

Ting, Y.L.T. (2011), CLIL: towards brain-compatible science-education, in Marsh, D., Meyer, O. (eds.), Quality Interface: examining evidence and exploring solutions in CLIL, pp. 12-26, Eichstaett: Eichstaett Academic Press

Tolmie, A.K., Topping, K.J., Christie, D., Donaldson, C., Howe, C.J., Jessiman, E.,et al.(2010), Social effects of collaborative learning in primary schools. In Learning and Instruction, 20(3), pp. 177–191.

Tymms, P., Merrell, C., Thurston, A., Andor, J., Topping, K., Miller, D.(2011), Improving attainment across a whole district: School reform through peer tutoring in a randomized controlled trial. In School Effectiveness and School Improvement, 22(3), pp. 265–289.

UNICEF (2007), Innocenti Research Centre. Child poverty in perspective: An overview of child well-being in rich countries, Florence: Innocenti Report Card http:// www.unicef-irc.org/publications/pdf/rc7_eng.pdf.

van Beek JA, de Jong FPCM, Minnaert AEMG, Wubbels Th (2014), Teaching and Teacher Education, Elsevier Ltd 40, pp. 1-9

van Gelderen M, Brand M, van Praag M, Bodewes W, Poutsma E, van Gils A (2008). Explaining entrepreneurial intentions by means of the theory of planned behaviour. In Career Development International, 13(6), pp. 538–559. http://dx.doi.org/10.1108/13620430810901688

Vermunt, J. D. H. M. (1994), Design principles of process oriented instruction. In F. P. C. M. de Jong, B. H. A. M. van Hout-Wolters (Eds.), Process-oriented instruction and learning from text, Amsterdam, VU University press

UN (2005), Tunis Agenda for the Information Society, WSIS-05/TUNIS/DOC/6(Rev. 1)-E

UNCTAD (2011), A framework for Science, Technology and Innovation Policy Reviews. Helping countries leverage knowledge and innovation for development. United Nation publication. New York and Geneva

UNCTAD (2013), Division on Technology and Logistics. Activity Report, United Nations Publications, New York and Geneva.

Watts AG (2009), The European Lifelong Guidance Policy Network and the role of National Lifelong Guidance Policy Forums. A paper presented to a conference held in Abano Terme, Italy, on 2nd March, 2009

Wolff EN, Baumol WJ, Saini AN (2014). A comparative analysis of education costs and outcomes: The United States vs. other OECD countries, in Economics of Education Review 39, pp. 1–21, Elsevier Ltd. http://dx.doi.org/10.1016/j.econedurev.2013.12.002

World Health Organisation (2010). Mental health and development: Targeting people with mental health conditions as a vulnerable group http://whqlibdoc.who.int/publications/2010/9789241563949_eng.pdf

World Health Organisation (2012), Social determinants of health, http://www.who.int/social_determinants/B_132_14-en.pdf

Wilkinson R, Pickett K (2009). The spirit level: Why more equal societies almost always do better, Allen Lane