

**High Education: towards development  
of innovative human capital**

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**Abstract**

This article discusses an activity based approach for teaching and learning applied in Higher Education to the development of Human Capital capability. According to the Leif Edvinsson, in one of the classic works in the area of Knowledge Management, Human Capital plays a significant role in overall Intellectual Capital. "... Intellectual capital is the sum of structural capital and human capital. Human capital refers to the knowledge, skill, and experience of the employees. Structural capital refers to the extension and manifestation of human capital. It includes tangibles such as the information technology systems, brand and company images, customer databases, organizational concepts and manuals." [Bucklew and Edvinsson, 1999]

From other, social and economics points of view, Eva Gamarnikow and Antony Green summarised Human Capital thus: "In economic, capital refers to resources (whether financial or physical) that are used for the production of goods. It can also refer to all resources that bring in income. Social Capital and Human Capital are terms used in the social science to discuss analogous concepts with regard to social resources derived from social interaction (social capital) and individual development (human capital)." [Gamarnicow, 2003]

For Higher Education in general, and for the development of activity based teaching and learning in particular, a comprehensive understanding of human capital is essential. Gamarnikow and Green clarify: "There are at least four ways of thinking about human capital. For economists, human capital has a specific, narrow meaning: It refers to the opportunity cost of individuals' or states' investing in education-forgone earnings plus the cost of education set against expectations of future (higher) earnings and economic productivity, respectively. At the other extreme, the term human capital is often as used merely as popular shorthand for education in general.

The two intermediate perspectives are much more critical and compare the human capital approach to education unfavourably with other approaches. The first of these critical perspectives focuses on the social role of education. ... The other critical perspective focuses on the ways in which education operates at the level of the individual. It criticises the human capital approach for reducing education to the inculcation of marketable skills rather than taking a holistic approach and educating the whole person."

As part of its strategic plans to support development of the Knowledge-based Economy, Southampton Solent University (SSU) aims to advance appropriate programmes of study. For this

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purpose an activity based approach for teaching and learning is in process of deployment at Faculty of Technology at SSU.

The article discusses definitions of Intellectual Capital, Human Capital, Social Capital, Knowledge Management and Knowledge, their interaction in the global information environment and in the particular context of Higher Education. It presents also the principles and design of an activity-based model for learning and teaching and relevant illustrations.

**Keywords:** Active Learning, Human Capital, Intellectual Capital, Social Capital, Knowledge Management, Knowledge.

## **1. Introduction**

In support of knowledge based economy development in its region, Southampton Solent University aims to implement an advanced activity-based approach for teaching and learning. Activity based learning and teaching is a model based on the concept for Active Learning, widely discussed in the literature [Robinson and Udall, 2003][Udall and Wright, 2005].

This model of education endeavours to optimise teaching and to maximise learning outcomes by effective employment of students' efforts. In this instance, it is enriched with novel subjects and topics from the area of Knowledge Management, essential for the sustained development of knowledge based economy. The aim of this article is to define the elements of the teaching as a set of activities, which will stimulate the students' creativity, will encourage them to build comprehensive knowledge, to develop sufficient understanding and to gain competitive practical skills.

## **2. Teaching Framework**

This section discusses considered framework for teaching determined by definitions of Social Capital, Human Capital, Intellectual Capital, Knowledge Management and Knowledge available in the literature. In order to justify the human capital creativity importance for community, it relates social, cognitive and technological issues with the process of teaching and learning.

### **2.1. Social Capital**

According to the literature "Social Capital is one of the most popular, as well as the most contested, terms in contemporary social science. At the most general level, it refers to the quality and quantity of social connections, as captured in the popular aphorism "It's not what you know, it's who you know." [Michael W., 2003] In this context the attempts of corporate Internet sites, entertainment sites, and online services to move away from the static presentation of information to interactive

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communities, involving the members of the community in ongoing public dialog deserves attention [Levitt, et al., 1999].

Higher Education can be considered as an advanced environment for development of social capital. "In the contemporary academic literature, social capital is discussed in two related (but clearly different) ways. The first, primarily associated with sociologists, refers to the resources (e.g., information, ideas, support) that individuals are able to procure by virtue of their relationships with other people. These resources could be considered as a social capital in that they are accessible only in and through these relationships". [Michael W., 2003][Lin et al., 2001][Cohen et al., 2001]

Other point of view to social capital refers to the nature and extent of involvement in informal and formal interactions. "From chatting with neighbours and hosting card nights to joining environmental organisations and political parties, social capital in this sense is used as a conceptual term to characterise the many and varied ways in which a community's members interact." [Putnam, 2000]

Harmonisation of various types of interactions with modern technologies and globally distributed knowledge in Higher Education Institutions could contribute to the effective process of learning and teaching and then to building of students innovative abilities.

"A range of social problems - crime, health, poverty, unemployment have been linked empirically to a community's endowment of social capital (or lack thereof), and with them a concern among citizens and policymakers alike that new forms of social capital must be constructed, ones appropriate to the technological and demographic realities of the twenty-first-century information economy." [Michael W., 2003].

As an example, so called Communities of Practice could be considered as a highly successful form of social capital [Lesser and Prusak, 1999][Wenger et al., 2002][Wenger and Snyder, 2000].

In summary the novel form of association based on modern communications technologies offers a wide potential for constructing new forms of social capital. Therefore incorporation of this subject in new courses will contribute to the development of innovative thinking and skills.

## 2.2. Human Capital

In the literature Human Capital is determined as: "In economic, capital refers to resources (whether financial or physical) that are used for the production of goods. It can also refer to all resources that bring in income. Social Capital and Human Capital are terms used in the social science to discuss analogous concepts with regard to social resources derived from social interaction (social capital) individual development (human capital)." [Gamarnicow, 2003]

For sustained development of competitive human capital in general and for a feasible implementation of activity based teaching and learning in particular a comprehensive understanding of human capital is essential.

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In the academic environment social – human capital has specific dimensions. Presence of modern technologies such as remote access to resources, which could be unavailable in local neighbour environments, combined with activity-based approaches in the process of learning, could be very productive and beneficial. Interactions and competitions in remotely distributed heterogeneous environments stimulate the ability to invent successful solutions and intuitive thinking. There is potential for negative outcomes. Special attention is required for example in student –computer interaction when the student could perceive and trust computer-mediated interaction with remote (and potentially malign) parties as interaction with friends and colleagues. This case must be explicitly addressed, to prevent unauthorised access and influence, particularly with younger students.

### 2.3. Intellectual Capital

Intellectual Capital has been described by one commercial organisation as: "...the knowledge, skill, and technologies used to create a competitive edge for Skandia. Intellectual capital encompasses the access to and use of all employees' knowledge and applied experience, and the organizational structure, technology, and professional systems within a firm. These elements translate into competitive advantage and monetary gains.

Intellectual capital is the soft and intangible part of the value of the company in addition to the financial balance sheet. It is sometimes referred to as goodwill, technologies, competence, etc. A more managerial definition of Intellectual capital is the sum of structural capital and human capital. Human capital refers to the knowledge, skill, and experience of the employees. Structural capital refers to the extension and manifestation of human capital. It includes tangibles such as the information technology systems, brand and company images, customer databases, organizational concepts and manuals." [BuckLew and Edvinsson, 1999]

Other authors try to determine Intellectual Capital together with Knowledge and Knowledge Management.

"The first use of the term is thus to describe the dynamic effects of individuals' intellect. What caught the attention of managers (and management consultants) is that Tom Stewart makes IC the attribute of an organisation." [Sveiby, 2001]. This publication summarises several definitions such as "Intellectual material that has been formalized, captured and leveraged to produce a higher-valued asset." [Klein and Prusak, 1994] and "Knowledge that can be converted into value." [Edvinsson and Sullivan, 1996] and then stress to the advantage for the firm "to transform the innovations produced by its human resource into intellectual assets, to which the firm can assert rights of ownership. One major task of IC managers is to transform human resource into intellectual assets." [Edvinsson and Sullivan, 1996].

## 2.4. Knowledge Management

“The origins of the term "Knowledge Management" are more obscure and have not been properly researched. “ [Sveiby, 2001]. “The "Management of Knowledge" is very abstract and the notion is an unfortunate oxymoron. I prefer to define KM as: The Art of Creating Value from Intangible Assets. "Value" being both financial and non-financial. “ [Sveiby, 2001].

Knowledge Management (KM) can be considered as a process, which includes several stages amongst, which perhaps are knowledge creation, identification of knowledge value, knowledge transformation and presentation, knowledge share and knowledge utilization. A specific understanding on KM add to the definition and interpretation of this term:

“You can't manage knowledge — nobody can. What you can do is to manage the environment in which knowledge can be created, discovered, captured, shared, distilled, validated, transferred, adopted, adapted and applied. “ [Collison and Parcell, 2004].

In the modern information space Knowledge Management acquires an e-dimension [Frappaolo, 2006]. It is interpreted in the following manner: “Clearly, knowledge management is not about technology. But, technology has heightened the need for, and powers of, knowledge management. Practical technology approaches to knowledge management include: - personal profiling; - categorization/taxonomy; - visualization of knowledge; - search and retrieval; - agents; - workflow; - decision-support.” [Frappaolo, 2006].

However, some research and experimental results suggest slightly different understanding about technologies, namely digital electronic systems are capable of generation of processes, which independently identify knowledge, essential for certain purposes, then abstract, transform and store this knowledge and then use it in order to solve given task. This in high extent could be considered as a model of the purposeful behaviour of biological systems. [Penev, 2008]

Information technologies also relate social capital and knowledge management. “A range of technologies can facilitate intermediation. These technologies are especially valuable for organizations that are highly distributed geographically and therefore less likely to encounter face-to-face or synchronous communication in the normal course of interaction among knowledge workers. In support of the need for personal communication, intranets, instant messaging, online collaboration, e-mail and groupware applications can serve as meeting-places for establishing contact between knowledge seekers and knowledge providers.” [Frappaolo, 2006].

## 2.5. Knowledge

Attempts to define Knowledge Management raise the question “What is knowledge?”

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Various literature sources propose several points of view. Two types of interpretation can be identified in the domain of KM . “IT-Track KM = Management of Information. Researchers and practitioners in this field tend to have their education in computer and/or information science. They are involved in construction of information management systems, AI, reengineering, group ware etc. To them knowledge = objects that can be identified and handled in information systems.

This track is new and is growing very fast at the moment, assisted by new developments in IT.

People-Track KM = Management of People. Researchers and practitioners in this field tend to have their education in philosophy, psychology, sociology or business/management. They are primarily involved in assessing, changing and improving human individual skills and/or behaviour. To them knowledge = processes, a complex set of dynamic skills, know-how etc, that is constantly changing. They are traditionally involved in learning and in managing these competencies individually - like psychologists - or on an organisational level - like philosophers, sociologists or organisational theorists. This track is very old, and is not growing so fast.”

However definition of the second track “Knowledge – Process” may face criticism. “a complex set of dynamic skills” is a static entity different from process interpretation and “constantly changing” is learning or knowledge updating rather than knowledge itself.

Other modern authors proceed from their particular experience:

“Most people have an intuitive sense that knowledge is broader, deeper and richer than data or information. . . . Knowledge derives from minds at work. . . . Knowledge is a fluid mix of framed experience, values, contextual information, and expert insights that provides a framework for evaluation and incorporation new experiences and information. It originates and is applied in the minds of knowers. In organisation, it often becomes embedded not only in documents or repositories, but also in organizational routines, processes, practices, and norms.” [Davenport and Prusak, 1998, p5]

Asian understanding on the notion knowledge is suggested implicitly by native philosophic traditions: “Japanese Intellectual Tradition based on Asian philosophers – Buda, Confucius states: - oneness of human and nature; - oneness of body and mind; - oneness of self and other.”

[Nonaka and Takeuchi, 2000, p27]. Contributing to knowledge interpretation is discussion on explicit knowledge and tacit knowledge [Nonaka and Takeuchi, 2000, p27], which can be related with earlier speculations on “what is knowledge?”. This question has been the subject of investigation and discussion for thousands years.

Intuitive cognition is defined as an act of apprehension in virtue of which the intellect can evidently judge that the apprehended object exists or does not exist, or that it has or does not have some particular quality or other condition; in short, an intuitive cognition is an act of immediate awareness in virtue of which an evident judgment of contingent fact can be made.

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Abstractive cognition is defined as any act of cognition in virtue of which it cannot be evidently known whether the apprehended object exists or does not exist, and in virtue of which an evident contingent judgment cannot be made. William of Ockham (1285 – 1349)”

[Encyclopaedia of Philosophy, Vol.8, p. 308]

“Knowledge of the external world can be obtained either by intuition or by abstraction. . . . By abstraction, one obtains only an indistinct and confused image of a thing. Tommaso Campanella (1568-1639)” [Encyclopaedia of Philosophy, Vol.2, p. 12. ]

Relation of abstraction and intuition with knowledge could clarify knowledge identification and acquisition. The Cognitive value of Abstractions could be summarised in: - understanding and learning of reality; - thinking and imagination; - behaviour and action; - change of reality. Then abstraction – classifications could contribute significantly to the discussion about the process of knowledge management. Abstractions can be classified as: - abstraction as an *entity* and as a *process*; - levels of abstraction; - temporal, spatial, event and process abstractions. Then abstraction – definition contribute to the knowledge definition namely: Abstraction is a form of cognition, based on separation in thought of essential properties, features, characteristics and relationships. Main types – separation, generalization, idealization. [Penev, 2001]

Now managers come close to the understanding “By its own Knowledge is power. (Nam et ipsa scientia potestas est. ) [Francis Bacon, 2008].

Perhaps a definition, which bridges information and cognitive interpretation of knowledge, is: “Knowledge is the perception of the agreement or disagreement of two ideas.” [John Locke, 1996], and only Plato’s sentence “knowledge is truth beliefs” could be added in conclusion of this section.

### 3. Active learning and teaching

The teaching approach, which is in the process of implementation as mentioned above, is based on the concept for Active Learning [Udall and Wright, 2005]. The course consists of separate sections, referred to as activities. Each activity starts with a seminar where a number of academics and experts introduce relevant social and technical issues. The seminars are presented and distributed across the teaching period. After the seminar the section includes definition of certain tasks to the learners. For successful completion of the task the student should be encouraged to do research, independent investigation and to attend lectures in relevant available units. A statement of task in the presence of knowledge deficit indirectly creates a dilemma for students – either study and learn how to solve given task or to invent a method to solve it. In addition specific characteristics of this approach can be described as simultaneous multilevel student education. This characteristic requires determination of the expected outcomes and criteria for assessment for each particular

level. More details about learning outcomes could be found in earlier publications [Penev and Rees, 2008].

### 3.1. Learning and Teaching Strategy

Integration of learning and teaching methods involves seminars, small group tutorial sessions and practical exercises used as the means of providing comprehensive understanding of the advanced concepts, techniques and tools that are involved in the activity. [Penev and Rees, 2008].

The objective of the pedagogical approach primarily based on activities is to encourage and develop students creativity and innovative practical skills in the context of theory and best practice. The linkage is developed through seminar and group work elements, and demonstrated and reflected upon through the individual work and assessment vehicles.

“The close blend of theory and practice, characteristic of Southampton Solent University’s curriculum approach, is developed particularly through the practical tutorials, where the students get the opportunity to see the implications of various approaches demonstrated through their own work. This bridges the cognitive skills development gap through incremental assimilation and embeds genuine understanding of the professional implications of the adoption of the various approaches. Although role differentiation (administrator, content developer, etc.) is not practiced, the necessary awareness will emerge from the acquired skills base.” [Penev and Rees, 2008]. Details on assessment, employability and complement with existing units are already published.

## 5. Conclusion

The article introduces a framework of activity based approach for teaching and learning. It overviews a general knowledge in the field of Knowledge Management, which will be exploit in order to enhance development of innovative and competitive human capital. The aim is to take advantage of exciting at Southampton Solent University knowledge assets, in terms of available units and academics expertise, which can be optimised in order to deliver diversification of the portfolio of courses and to meet the challenges in Higher Education for extensive development of social and human capital.

For future work the case will be subject of rigorous study after planed start from next academic year. The objectives of further investigation involve analysis of collected sufficient material which together with applied methodology will be a subject of additional examination. Further research will focus on comprehensive evaluation of wide range relevant literature sources, which could benefit modern knowledge in this field. The article contributes to the discussion for the role of High Education in generation of human capital.



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