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Enhancing Negotiation Skills Through On-Line Assessment of Competencies and Interactive Mobile Training

The European Commission's initiative New Skills for New Jobs, highlights the importance of soft skills development to promote better anticipation of future skills needs and better match between skills and labour market needs.

In particular, The European Framework for Key Competences for Lifelong Learning (KCLL), identifies negotiation as one of the main skills capable of improving both "Social and civic competences", and a "Sense of initiative and entrepreneurship", as also highlighted in which identifies and defines the key competences that citizens require for improving their social inclusion and employability. Although the increasing awareness of the importance of those skills, the research conducted on the practices in negotiation training in school, sport contexts and business in Italy, Spain and Turkey, reports that with regard to negotiation and soft skills development in education, very little has been done related to the subject. Similarly, despite the growing interest in vocational training in soft skills as critical to both organizational and personal success in the workplace, it seems that a lack of funds prevents a wide offer of dedicated training courses.

The ENACT project has the ambition to achieve a new milestone towards the provision of soft skills training, introducing and innovative pedagogy and assessment methods for helping people to enhance and (self-assess their negotiation skills based on recent psychological modelling and the application of current ICT research (e-learning, mobility, internet, artificial intelligence), crossing the boundaries between educational games and ITSs, merging the importance of an online role-playing training applied to e-learning platforms and dynamical learner assessment with the environment of a serious game.

Motivation and Project background

The ENACT project - Enhancing Negotiation Skills Through On-Line Assessment of Competencies and Interactive Mobile Training - enactskills.eu is a European funded project developed by a consortium of private and public organizations and research centers - Plymouth University (UK), Aidvanced S.r.l. (Italy), UNINA University of Naples Federico II (Italy), Fondazione Mondo Digitale (Italy), Turkish Ministry of Youth and Sports (Turkey), Fundetec (Spain).

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In particular, ENACT implements a training methodology, in the form of an online "game", which emphasizes practical skills by exploiting an innovative technology based on uses autonomous intelligent agents as virtual interlocutors for different target users (students, athletes, employee, managers, trainers); an innovative and scientifically sound assessment methodology, in the form of an intelligent tutor, capable of providing reliable analysis of the user's negotiation skills and communication style.

Within the ENACT project negotiation has been identified as crucial soft-skill or learning and personal development, as it is a social–intra–interpersonal competence that can effectively and positively impact on people's personal and professional life, taking inspiration from the integrative approach (Walton and McKersie, 1965; Fisher and Ury, 1981; Zartman and Berman, 1982), also refereed as a Win-Win paradigm (Covey, 1989), which is based on the idea of negotiation as a cooperative process, rather than competitive-distributive, that involves "making concessions" to reach an agreement, searching for reciprocal mutually satisfying solutions. The idea of negotiation embraced is based on effective communication with ourselves and others, as well as the awareness of how we are perceived and understood by others. The basic assumption is that negotiation and effective communication can be effectively discovered, improved and developed through dedicated training courses and personal development programmes.

In **Italy**, two significant online multiplayers role-playing tools for negotiation, decision making and conflict resolutions have been developed within EU projects: the 2004 SISINE[1] project (**S**istema **I**ntegrato per la **SI**mulazione di **NE**goziazione) and 2008 EUTOPIA MT i developing an e-learning platform and a teaching methodology to conduct negotiation role-playing games, trough 3D multiplayers training environment that enables learners to interact real time to each other through the mediation of avatars and a conversational interface of textual chat. Created in 2010, PALMA (Palestra Manageriale) is instead a single player serious business game software in which each single interaction consists in the selection among the available range of sentences describing a specific situation. Palma has been developed to train users to be aware of the complexity of interpersonal skills involved in communication process: leadership, negotiation, persuasion, etc. WIN WIN MANAGER is instead a multiplayer negotiation business game which can be entirely played on the Internet without the need of installing any specific software. It gives players the opportunity to obtain the best profit from the game itself. WIN WIN MANAGER is often used by companies to evaluate new recruits in a more efficient and cheaper manner.

In **Spain** the research project called eAdventure[2] developed at Universidad Complutense de Madrid aims at facilitating the integration of gaming simulations in educational processes in general and Virtual Learning Environments (VLE). Users can use the graphical editor to create the games or directly access the human-readable source documents that describe the adventures using XML markup.

The research conducted on the practices in negotiation training in school, sport contexts and business in Italy, Spain and Turkey, reports that with regard to negotiation and soft skills development in education, very little has been done related to the subject, although the increasing awareness of the importance of those skills. Similarly, despite of a growing interest in vocational training in soft skills as critical to both organizational and personal success in the workplace, it seems that a lack of funds prevents a wide offer of dedicated training courses.

Italy has been forefront of innovative training tools, such as role-playing and simulation tools for soft skills development, by the way training practices related to negotiation skill have been developed mainly by Universities or private training providers for business/employed people. These courses are not computer based, and aim to provide negotiation techniques for communication with stakeholders. However, the ability to negotiate is considered essential to be successful in all interactions with other people, it can improve self-confidence and business performance. Negotiation abilities are recognized as: "communications and active listening" and "critical and creative thinking" followed by "empathy" and "emotional stability". Interviewed school teachers suggest it would be important to improve them by training, seminars, courses or online game: "training is required to help development of communication and negotiation skills" and "specifically designed computer games supporting the development of negotiation skills can be very beneficial". Moreover students thinks that the use of the ENACT tools could make learning fun and engaging: "it could be funny!"

The advantages of online games are mainly their technological characteristics which make the training possible anytime and anywhere. More specifically teachers mentioned the following learning advantages: recognize negotiable situations; proceed estimating carefully the counterparts; appreciate and analyze behaviors and psychology related to negotiation; control and rectify one's own negotiation style.

In **Spain** the subject is in some cases part of psychological courses on communication skills included in teachers initial training, which are more theoretical than practical. The majority of interviewed managers state to be "extremely aware" or "moderately aware" of their negotiation skills. Comparing professional and personal spheres, negotiation skills are perceived more important for work related activities than for personal relationships. A clear understanding of interlocutor's interests, and the research of acceptable solutions to the parties involved in negotiation processes is considered as a crucial aspect of successful negotiations both in professional and everyday life. With regard to the communication style employed, managers and employees tend to use different styles, perhaps depending on specific given situations, such as: active listening, open communication, attention to body language, passive behaviour with difficulty to express personal opinions when involved in large meetings, and say "no". Therefore assertiveness seems to be a crucial aspect to be addressed with training. "Communication and active listening" and "empathy" are considered the soft skills mainly involved in a negotiation process. Moreover, the features "online" and "role-play" are considered as added values: "online allows flexibility and save time on transports" and "role-play is much more dynamics, than traditional methods[...] people take part in the learning process by playing a role. Deepening the concept of negotiation skills, managers identified the links between "sell/trading" and "negotiation" immediately. Negotiation skills are also essential to be competitive on the market: "in the negotiation process for a contract, when you have other competitors, this requires you are able to offer the most suitable solution for the customer, negotiating the reward…".

In **Turkey** no specific training practice linked to negotiation and communication skills have been developed, but the interviewed target groups that negotiation and communications abilities can be described as: being able to listen and focus on what others are saying; being able to establish trust; communicate effectively; being able to understand what others want to achieve. Athlets claimed that would be particular interesting to deepen the negotiation process within the athletes' peer to peer relationships, as well as coach-trainer and athlete relationship, and consider role-playing as a valuable learning technique to use in this direction. Also for Turkish respondents, "communication and active listening" "judgment and decision making", "team working" , "problem solving", "creative thinking", and "empathy" are valued as significant components of successfully negotiation processes.

Psychological model and platform implementation

The Rahim's model (1979) have been chosen for the design of the training, as it stressed on the learning process enabling to learn the appropriate use of the conflict styles depending on situations (Rahim, 2001); the idea of conflict not as a negative concept but as an opportunity for people to learn and work more effectively. This model differentiates 5 styles based upon two basic dimensions: concern for self, the degree (high or low) to which a person attempts to satisfy his/her own concern; and concern for others, the degree (high or low) to which a person attempts to satisfy the concern of others. The combination produces the following styles of conflict management.

1. Integrating (high concern for self and others) style involves openness, exchange of information, and examination of differences to reach an effective solution acceptable to both parties.
2. Obliging (low concern for self and high concern for others) style is associated with attempting to play down the differences and emphasizing commonalities to satisfy the concern of the other party.
3. Dominating (high concern for self and low concern for others) style has been identified with win–lose orientation or with forcing behaviour to win one's position.
4. Avoiding (low concern for self and others) style has been associated with withdrawal, buck-passing, or sidestepping situations.
5. Compromising (intermediate in concern for self and others) style involves give-and-take whereby both parties give up something to make a mutually acceptable decision.

Each style manifests itself in a pattern of observable behavioural indicators that have been identified in the communication model of assertiveness, passivity and aggression . For each of the styles, excluding compromising, three sets of variables have been distinguished: verbal (the words used in a sentence), paraverbal (how the verbal message is conveyed, tone, pitch and volume of the voice), and non-verbal (the body language), grouped in the two dimensions proposed by Rahim, i.e., concern for self and for others. Those variables have been used to design the behaviour of the avatars which are the on- stage agents.
ENACT focuses in fact a *Drama-based* game simulating of a dialogue between two human avatars, one controlled by the user and the other by the computer (the bot).

ENACT Computational-base platform .is designed to be played by a single user over internet, interacting with a 3D artificial agent, according to the defined psychological models, inside the game scenarios developed using the Unity framework (https://unity3d.com/).

Avatars are able to perform a range of basic expressions using verbal cues, such as vocal tone and structure of the sentence and non-verbal indicators, such as Facial expression, eye contact, body posture and gestures. Those indicators, in total 7, have been chosen for their relevance in the behavioural description of different communication styles and they can be seen as indicators of specific behavioural traits that can be objectively observed and measured. Specifically, the variables are the following:

1. Structure of the sentence. "I" statement, that is the way in which owns ideas are communicated to others and how the term "I", as subjective element, is phrased in the sentence (e.g. "I would prefer….", "I must have…", "I am not sure…");
2. Fact-opinions, that is the awareness shown by the speaker of the difference between owns opinions and objective facts (e.g. "I think that….", "it's all your fault….", "I may be wrong….");
3. Enquiring, that is the level, and value, of inclusion of other's opinions, such as, "How would you feel about that?" which is inclusive and open to discussion, versus, e.g. "I don't mind what you think, just do it!" which is the opposite;
4. Criticism, which is the rate of constructive versus manipulative and/or self-destructive criticisms, e.g. "would you find it more helpful if…." versus "If I was you I would…." or "I am completely useless in doing….;"
5. Vocal Tone, Vocal tone is represented as the callout's shape.
6. Facial expression are represented as 3D "idle" animations of the avatars. These animations occur when the character does not do any action (hence being idle), and awaits for the interlocutor's answer.
7. Body gesture are represented as 3D animations that activated while the avatars emit sentences. The sex of the characters is a variable related to the gender specified by the user at the registration, mandatory for accessing the platform.

The interface is designed to be as intuitive as possible and only require minimal and simple interactions.

Each scenario, available in English, Italian, Turkish and Spanish, starts with a brief text explaining the situation in which the user has to play, the role assigned to the user and its goal within the given scenario (fig. x).

The game dynamics in based on the user-bot interaction, which is divided into states formed by one turn of speech for each party. In every state, the user can choose one among 4 possible sentences, each of which is correlated to a gesture and/or facial expression that shows the way the sentence will be told to the bot, as explained above. After the player's answer, the bot computes the answer according to the embedded psychological model and the specific characteristics associated to it within the scenario. That is, e.g., a dominating bot will show predominantly aggressive and authoritative behaviours. Conversely, an obliging bot will show an overall passive and submissive attitude toward the negotiation. This will help the user to recognize of situation and people's behaviour, as well as to contextualize the negotiation in different realistic situation.

The innovative aspect of the game is the assessment element, based on (1) the Rahim Organizational Conflict Inventory-II, Form C (ROCI-II); (2) a specifically tailored Big Five personality test; (3) the Assertive efficacy believes; (4) the Self-efficacy scale; and (5) the Coping scale, which implement soft skills measurements with innovative methodology with a rigorous psychometric approach and allow to develop the training opportunities thanks to a selection of scenarios from the assessment in which the user is guided through the recognition and self-reflections of various negotiation styles and accompanying behaviours.

Personality traits, in particular, are one of the most important determinants of conflict management styles. The BIG Five Personality Dimensions consists of five traits: Extroversion, Agreeableness, Openness to experience, Emotional stability, and Conscientiousness [17].The administration of a tailored version of the BIG Five aims to assess whether a model of personality has direct impact on the preferences of conflict handling style selection [18]. The self-efficacy and assertive efficacy scales aim to assesses self-beliefs of an individual about the ability to handle a variety of difficult demands in life (e.g. conflicting situations), that are considered the most important determinants of the behaviours people choose to engage in and how much they persevere in their efforts in the face of obstacles and challenges. Finally, the coping scale assesses a range of thoughts and acts that people use to deal with the internal and/or external demands of stressful encounters. Therefore it is possible to investigate possible relationships between high scores of self-efficacy and relevant personality traits with the style adopted by the ENACT users, and related positive effect on negotiation processes observed within the game sessions.

The system collects the data about the user's behaviour and choices and creates a model of the player that will then be used for generating tailored information in the training session. The score and the profile of the player's negotiation skills are actually calculated by summing the independent concern for self and concern for other variables accumulated during the interactions, which are represented within every sentence that the user can choose. The assessment environment is composed by a series of 8 different scenarios that concern a negotiation situation between two peers. The artificial agent's behaviour is static, not adaptive and reflects a specific negotiation style for each of the scenarios.

The user does not get any feedback between the scenarios, and there is no right or wrong answer.

There are three parameters according to which the scenarios were designed:

1. The negotiation style adopted by the bot, respectively Integrating, Dominating, Obliging or Avoiding;
2. If the player and the bot have the same or opposite gender, so the interactions can be male-male (or female-female) and male-female (or female-male);
3. If the negotiation concerns a decision about two different possibilities (divergence) or concerns a single object which must be exclusively assigned to one of the two characters (convergence).

The tutoring system is available only after the assessment has been completed, thus, it will intervene during the training scenarios and at the end of the game session in order to provide useful information to the user about his/her performance related to the bot he/she is currently interacting with and to his/her general behaviour when managing conflicting situations. The user is given again a profile based on the Rahim's model related to the specific situations he/she played, together with advices about how to improve the efficacy of his/her communication and the changes achieved since the assessment profiling. The profile emerges mainly by the comparison of the behaviour of the user and the style of the artificial agent he/she interacted with. The user can revise the history of all the choices made during the scenario and is guided through the understanding of the possible hidden aspects of the negotiation.

Innovative aspects and future applications of the game

The development of soft skill training is relatively recent and anyway related to face to face programmes more theoretical than practical. Porting soft skill training from classroom to digital enhanced environments, open the opportunity to a vast scale application of the training model in different context, from schools, to sport to business. Furthermore, the introduction of enhanced role-playing simulations are usually based on 2D or 3D chat rooms explore the implications of delivering game experiences for education and training to achieve specific learning goals engaging the learners in more motivating real life scenarios. The training session is designed to be a protected "gym" for the user to try different negotiation context and experience different styles of handling interpersonal conflicts. The usage of virtual agents in this context, although it might be perceived as artificial and somehow distant from a real life situation, it brings the benefit of creating a protected and personal environment in which the user is not forced to express herself in interactions with other, real, people, which is known to be one of the major stressful factors in traditional role-playing simulations in classroom.

The game is especially designed to train learners negotiation skills but can be customised to respond to other soft skills train9ing needs based on the psychological model applied.

The innovative aspect of the game is the assessment element, which implements soft skills measurements with innovative methodology, applying a rigorous psychometric approach. The training within the game can be implemented in many different ways and based on the psychometric profile of the user. In particular, thanks to a selection of scenarios from the assessment in which the user is guided through the recognition and self-reflections of various negotiation styles and accompanying behaviours. This will help the user to recognize of situation and people's behaviour, as well as to contextualize the actions in different realistic situation.

Games facilitate users to recognize the consequences of their choices. The application in the school context can support students to learn through experiences, through testing and mistake. Games offer a protected environment to experiment and learn through errors, so the feedback information becomes meaningful and easy to understand because the reward for their achievements is immediate. The use of games motivate students to keep learning where their behaviour is fundamental to succeed. Experiential learning based on simulators advance performance and self-confidence, enhance memory and the performance of the knowledge gained.

Game mechanics applied to real life environments improve engagement and motivation and influence behaviours. The application of serious games in the context of the corporate sector can be more engaging than traditional forms of learning, because of the opportunity to bring out emotions such as enjoyment, excitement, anger and fun, cognitive and behaviour domains related to soft skills development that are not easily addressed by traditional trainings. It is the emotional engagement with the game that bring learners to understand the advantages of a behaviour change to deal with a specific situation.

[1] http://ercim-news.ercim.eu/en71/special/the-sisine-project-developing-an...
[2] http://www.entropykn.net/technology-enhanced-learning/serious-games/.