



Scenarios for virtual and virtually supported work placements

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1 Introduction

This document is developed in the framework of the EU-VIP (Enterprise-University Virtual Placements) project. It provides:

- definition and benefits of virtual and virtually supported work placements,
- description of organizational, pedagogical and technological foundations of virtual and virtually supported placements,
- support for developing validated scenarios for these types of work placements.

2 Virtual work placements and virtually supported work placements

2.1 Definitions

Work placement

Work placements (physical, blended or virtual) are a form of work-based learning and are widely recognized as a valuable way to allow students to learn in ways that may be difficult to achieve in traditional academic curriculum, where there may be limited opportunities for applying theory to practice. (Brodie & Irving, 2007) They also provide a range of educational practices, included in university programs where students spend extended periods of time in enterprises, providing them with the experience of the real world work, which they may practice after graduation. (Foster & Stephenson, 1998)

Virtual work placement

Virtual work placements are one of the four types of virtual mobility activities identified in the Being Mobile project (2006). This project defined virtual mobility as a form of learning which consists of virtual components through an ICT supported learning environment. It includes cross-border collaboration with people from different backgrounds and cultures working and studying together, having as its main purpose the enhancement of intercultural understanding and the exchange of knowledge. (Bijnens et al., 2006) The INTERN project (2007) has defined virtual work placements as work placements involving the use of an ICT supported environment where the three key stakeholders (students, universities and enterprises) interact with one another independent of time and space, and across geographical boundaries. It enables students, who do not have the opportunity to take on work placements abroad for social, financial or other reasons, to participate in virtual work placements with foreign companies. As the both aforementioned definitions mainly focus on the international aspect, a virtual work placement can also take place in a national context.

Virtually supported or 'blended' work placement

Work placements can also be a combination or a blend of physical and virtual mobility activities. In other words, ICT can be used to virtually support – prepare and follow-up – physical placements to enrich the experience and make it even more effective and rewarding. (Adapted from the INTERN project, 2007)

1.2 Benefits

Based on the definitions and therewith the main characteristics of physical, partly (“blended”) as well as fully virtual work placements, work placements can bridge a gap between theoretical learning and practice as well as cognitive and experiential learning. The practical work placement with authentic and situated work experience can be seen as the innovative answer to graduates’ difficulties to integrate into the job market. It is also suggested that work placements are effective in giving students insight into the world of work and career prospects (Au Yeung et al., 1993) and helping them to integrate into the work environment. Also, development and implementation of professional skills like adapting theoretical knowledge to practical needs, practical and technical competences are examples of learning goals and learning outcomes that are best achieved through work placements. (Ryan, Toohey & Hughes, 1996) Furthermore, in work placements, the student, the HEI and the enterprise ideally cooperate to achieve the aims of the placement. Thus, students can develop social and intercultural competences and improve their communicational skills (adapted from Nyström, 2004), as well as language skills in case of international work placements. This, in turn, can help students to understand that effective learning is a social, collaborative process. At a personal level, students also believe to learn interpersonal skills, time management, and to reach a better knowledge of career opportunities. (Gardiner and Singh, 1991)

The use of ICT within work placements offers an important learning opportunity for students and academic and teaching staff alike. Using ICT in a real life context will certainly improve competence and increase skills in a (distributed) work environment where ICT is increasingly important for everyday work. Virtual and virtually supported work placements are an exciting blend for a number of other reasons as well. According to Vriens et al. (2010), virtual work placements provide access to new, non-traditional and/or remote audiences that cannot participate in physical placements. These audiences can range from learners with limitations in (financial) resources to disadvantaged groups of individuals (e.g. students with special needs). (Vriens et al., 2010) Virtual placements consequently offer an opportunity for international, professional experiences to people who would otherwise not benefit from them, which in turn contributes to the idea of “equal opportunities for all” and the democratization of education. (Bijnens et al., 2006) With this enlarged access, participation in work placements will be increased, thus enlarging the ‘customer base’ of an

educational institution and the ‘recruiting base’ of an international company. Finally, the virtual components in work placements also offer learners a new sense of flexibility, both in time and in space. Virtual work placements can provide a way to combine studies, work and social life (e.g. easier integration of the work placement in full time study programs, more flexible combination of a work placement with a student job). (Vriens et al., 2010)

2 Selection of Stakeholders

Work placements are usually organized around three different groups of stakeholders: *students*, *HEIs* and *employers*. The relationship between these stakeholders is described in figure 1. The different roles and responsibilities will be elaborated further in chapter 4.

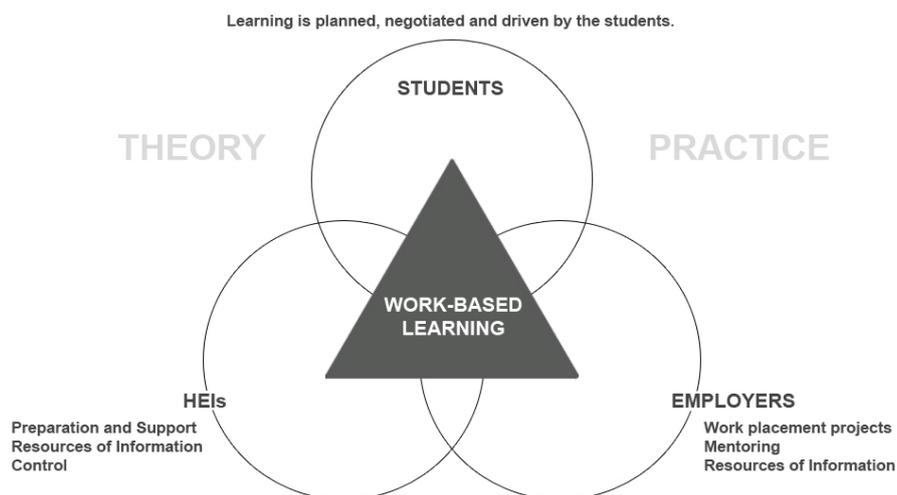


Figure 1. Relationship and roles of stakeholders

There are a number of different ways in which work placements can be organized around these actors depending on the different requirements and particularities of the specific work placement. In addition, the placements can be initiated and driven by any of the three actors involved. However, the process is slightly different depending on the driving factor. In the HEI driven scheme, the process is initiated by the HEI typically as a result of specific requirements in the curriculum. In most cases, this means that the work placement is compulsory. In the company driven scheme, in turn, the driver is typically the employer who wishes to enter into direct contact with students – potential future employees – and to contribute to their training. Students are also inexpensive labor force. Finally, the student driven scheme is defined as a situation where the student is the main responsible for all actions regarding the entire placement process.

Thus, the work placement is mainly based on students' own interests and motives. (The INTERN project, 2007; Q-Planet, 2009)

According to a study carried out in the framework of the EU-VIP project (2010), in case of work placements, students usually find their work placements independently. HEIs' role, in turn, is less prominent. In order to ensure the quality and to maximize the benefits of international work placements, however, the role of HEIs should be emphasized more. Also, therefore, the EU-VIP project has identified the HEI driven scheme as the optimal approach to include an intentional learning agenda in the placement. In practice this means that all work placements are systematically integrated into the institutional curricula and that the HEIs are actively involved throughout the placement process. Table 1 shows the different ways in which HEI driven virtual work placement can be organized. In these alternatives, the initiator is always a HEI or a network of HEIs in one or more locations. The role of company-HEI partnerships is also highly emphasized.

Table 1. Selection of actors in HEI driven virtual work placements.

HEI	Company	Student
One HEI in one location	1 or more companies in the same location	1 or more students in the same location
		1 or more students in different location(s)
	1 or more companies in different location(s)	1 or more companies in the same locations
		1 or more students in (an)other location(s)
Many HEIs in one location	1 or more companies in the same location	1 or more students in the same location
		1 or more students in different location(s)
	1 or more companies in different location(s)	1 or more students in the same locations
		1 or more students in (an)other location(s)
Many HEIs in many locations	1 or more companies in the same locations	1 or more students in the same locations
		1 or more students in different location(s)
	1 or more companies in (an)other location(s)	1 or more students in the same locations
		1 or more students in (an)other location(s)

3 Pedagogical approaches behind work placements

To design a virtual or blended work placement effectively; that is to assure that the intentional learning agenda can be realized, it is important to start from the pedagogical basis. As already mentioned, the theoretical foundation of work placements is found in the field of work-based learning and is underpinned by a range of learning approaches. The most important approaches are *experiential learning, situated and authentic learning, and social-based learning*. In what follows, these approaches will be elaborated further.

3.1 Experiential learning

Alderman and Milne (1998), Boud, Walker & Keogh (1985), as well as Boud (1993) conceptualize work-based learning as 'experiential learning'. This perspective of teaching and learning builds upon the work of Piaget, Lewin and Dewey (Nielsen-Englyst, 2003) and stresses the importance of a direct learning experience. It focuses on the learning process for the individual and relates solely to the meaning making process of direct experience. (Dewey, 1938) Learners actively construct their own experiences in relation to the working situation and tasks. Experiential learning includes both theoretical as well as practical elements in the learning process. In virtual work placements, the experience is usually drawn from work-based tasks provided by the enterprise via an ICT platform. According to the work-based learning model of Boud, Walker & Keogh (1985), experiential learning involves three phases (adopted to Kolb's experiential learning cycle (1984)): preparation, action and experiences, and reflection. Each phase integrates the key stakeholders, their roles and typical activities.

3.2 Situated and authentic learning

Boydell (1976), Hughes (1998) as well as Billet (1995) state that one of the benefits of work placements is the direct experience that is related to some realistic, authentic problems. This view points out the central value of situated theories of learning, which contrasts formal learning with the informal development of skills and expertise that takes place in a contextualized way through individuals' practice. The idea is taken further with the notion of cognitive apprenticeship. (Brown, Collins & Duguid, 1989) Based on the cognitive apprenticeship model (Collins et al., 1989), work placements as a form of work-based learning give students the opportunity to engage in authentic activities, which include opportunities to observe and absorb a multitude of new learning experiences by occupational tasks of increasing complexity, and opportunities to understand the overall purpose of tasks by reflecting on them. (Collins, Brown & Newman 1987) Students

have access to expert assistance with the initial approximation of tasks, modeling, coaching and support from experts, and guidance on sequencing of tasks to assist the development of skills.

3.3 Social-based learning

Any work placement is situated within a social context, in which students become a part of a new community. Thus, work placements are always social, collaborative processes. (Lave & Wegner, 1991) The argument is based on socio-constructivist approaches, particularly the work of Laurillard (1993). In some cases, where more than one student is involved in the same work placement project, forms of knowledge; e.g. facts, concepts as well as skills and techniques, are learned cooperatively in social practice. On the other hand, if students learn more individually than cooperatively in work placements, they also have the possibility to collaborate and discuss working tasks and problems with the HEI or the enterprise. Indeed, the role of teachers as subject experts is to provide advice and guidance to the students. However, considering the criticism that teachers as tutors in the academic context receive, they may be unable to provide insights and feedback that are of relevance to the work-based learners. (Bradley & Oliver, 2002)

Therefore, it is of high importance that the companies provide the work-based support, thus helping the learners to identify and arrange opportunities for applying concepts or gathering data in the workplace and to discuss. In the case of virtual and blended work placements, in turn, the fact that communication and collaboration is only possible with the help of ICT and that students are forced to learn more individually than cooperatively may always lead to problems with isolation, inactivity, frustration and the lack of motivation. Based on the emergence, the development and the widespread use of new communication and collaboration technologies, leading up to applications and services of Web 2.0, it is, however, possible to address these problems by implementing more interactive virtual tools in virtual work placements. Also, the importance of student selection, personal guidance and support is highly emphasized.

4 Model for virtual and virtually supported work placements

The actual activities, procedures and services regarding virtual and virtually supported work placements are described in figure 2. The different activities are categorized under four phases in which the nature of the activities may vary: *(1) preparatory phase, (2) before the work placement, (3) during the work placement, and (4) after the work placement.* The last three phases are closely related to the aforementioned experimental learning cycle of Kolb (1984) and the work-based learning model of Boud, Walker & Keogh (1985), which divide experiential learning into three phases (preparation, action and experiences, and

reflection). The EU-VIP categorization, however, also takes into account the preparatory phase, in which the actual work placement has not yet started. Nonetheless, that particular phase is equally essential and a natural part of the continuum, since it sets the scene for the entire placement process. In addition, the EU-VIP categorization emphasizes the importance of evaluation in the final stage. Reflection, in turn, is considered to start already in the “during phase” or even in the “before phase”, not only in the “after phase”.

Besides the activities, tools and technologies also play an important role in the work placement experience. In fact, the role of ICT within a virtual or virtually supported work placement is twofold. First of all, ICT plays a supportive role. It needs to be used to facilitate the kind of activity in which organizations are engaged. In other words, the traditional face-to-face activities are being complemented or replaced with those supported by information and communication technologies. Secondly, using ICT within virtual work placements also enhances the stakeholders’ expertise and learning in technology and distributed work. The level of basic ICT competence as well as the ability to engage in distributed work expected within the work force is on the increase, and a well-operated virtual work placement can certainly increase competence in these areas. Thus, the infrastructure chosen needs to be sufficiently challenging, fit for purpose, user-friendly and generic to meet the needs of all involved. (Adapted from the INTERN project, 2007)

The tools that can be used in virtual work placements are many and diverse in their application. However, it is extremely important that the choice of tools and the approach depend on the aims, the situation, the particular phase and the participants of each work placement, not the other way around. Thus, a successful approach is based upon a realistic analysis of what the virtual work placement requires in terms of communication and activity support, in light of what is in use and available within the organizations involved. (The INTERN project, 2007; Op de Beeck et al., 2008)

The different e-coaching tools and interactive communication tools in general are often categorized into two large categories (Op de Beeck et al., 2008):

- 1) Synchronous tools (facilitating communication between users *at the same time*), e.g. chat, videoconferencing, webconferencing, audioconferencing
- 2) Asynchronous tools (facilitating communication between users *independent of time*), e.g. email, online discussion forums, e-portfolio

Another typology of tools was created in the VM-BASE project (2008) and it reflects the tools’ specific use for e-coaching purposes. Tools that were distinguished are: reflective tools (e-portfolio, weblog), non-interactive tools (streaming media, informational website), collaborative tools (wiki, group blog, discussion

forum), communication tools (email, chat, video-, audio- and webconferencing), and social networking tools (social networking, shared media, social bookmarking). (Op de Beeck et al., 2008)

In what follows, the different phases (preparatory phase, before the work placement, during the work placement, and after the work placement) as well as the stakeholders' roles and responsibilities in them will be discussed more in detail. Also a number of examples of the use of tools and technologies in the different phases will be given.

Preparatory phase

The preparatory phase focuses on the needs and interests of the student, as well as on the grounding of theoretical and technical knowledge needed for the work placement. The quality procedures will be in place to ensure the educational policies of the placement. In this phase, the student starts to think about going abroad and search for information on possible work placements and make applications. The HEI, in turn, is responsible for creating and maintaining its partnerships with (international) businesses as well as for setting up application and selection procedures in line with the national and institutional policies together with the businesses. In this phase, predominantly fact-based information about the different work placement opportunities is given. The actual student selection is usually done either by the company or by the company and HEI together. In addition, it is extremely important that the work placements students take are integrated into the institutional curricula and that all students taking on work placements will be registered by the HEI before the actual placement.

Examples of tools and technologies to be used in the preparatory phase include among others websites, e-portfolios, audio- and videoconferencing, and email. Institutional websites are a convenient way to provide information to students. A good website is easy to access, well structured and regularly updated. It includes relevant academic and practical data both in the local language(s) and in English (Op de Beeck et al., 2008). Also useful links to e.g. the websites of potential employers could be integrated into the websites. E-portfolios, in turn, could be used to demonstrate students' abilities, qualities, and evidence of achievement and development for job application, whereas audio- and videoconferencing could be used for the actual job interviews, to give presentations and to conduct live meeting. Email is an easy medium especially for one-to-one contact and to build up personal relationships (Op de Beeck et al., 2008). The choice of tools, however, always depends on the individuals involved as well.

Before the work placement

In this phase, the student's application is approved and he/she starts to prepare for the actual placement. All stakeholders – students, academic and teaching staff, and company representatives – make considerations of what the learner brings to the planned work placement and what could enhance or inhibit the learning process. The stakeholders are responsible for designing the concrete placement in line with the pedagogical foundations of experiential learning in a situated and social context. They have to define clear learning outcomes; set goals; make an agreement about the tasks and deadlines to be respected; formulate communication and feedback protocol (evaluation process); and select tools and technologies in function of the learning goals and the roles of different actors and tasks. Students, in turn, have to be supported with their practical arrangements and offered preparative training in a variety of topics such as: how to use various communication and collaboration technologies, and how to communicate in online environments- codes of conduct. Also, time management, report writing and reflective practice concerning the tasks to be delivered during the work placement are important topics. The HEI staff and employers, in turn, should be supported in areas such as: how to use various communication and collaboration technologies, how to moderate and facilitate online discussions, how to give constructive feedback, and how to motivate students and manage their expectations.

Streaming media is a type of media that delivers moving images and/or sound over the Internet to one's computer (Op de Beeck et al., 2008). Streaming videos could be used among others for organizing online training, whereas audio- and webconferencing could be used to conduct live meetings. Email and chat are more suitable for daily communication between the stakeholders. Finally, students could use blogs or e-portfolios to start recording their personal reflections.

During the work placement

In this phase, the actual placement and therewith the practical part of the work placement takes place. Students are socialized into the work environment while interacting with the enterprise in the virtual environment. They are also encouraged to notice what is occurring within themselves in the form of reflection on personal development in relation to goals and within the enterprises. In addition, students must achieve factual knowledge and skills with practice required for completing their tasks on time. The HEI and the employer, in turn, are responsible for supporting the students and advancing communication between all stakeholders. They are also responsible for providing (e-)coaching and continuous feedback to the students. Technical support should be available at all times.

During the work placement, communicative, collaborative and reflective learning and working could be facilitated by integrating synchronous and asynchronous communicative tools, especially for the communication between the company and the student, to discuss the working tasks and to give feedback. Typical such communication tools are email, chat as well as audio-, video- and web conferencing. Email is a good medium to give personal feedback to the student, whereas chatting can be used to support students when they have short questions that need to be answered quickly. Audio-, video- and web conferencing can be used to conduct live meetings. They combine methods of online communication with the ability to deliver and present learning material, tasks and results. Research has also shown that face-to-face contact is often beneficial to the success of activities, because it builds a feeling of responsibility. Results of the first pilot projects conducted in the framework of the EU-VIP project (2010) also emphasize the importance of human factor. When it is not possible to meet face-to-face, the choice of technology seems to have an impact on the degree of involvement. A tool like video conferencing creates a much more personal interaction than for instance an asynchronous tool like email.

Asynchronous reflective and collaborative tools, such as blogs, could be used to record personal reflection. In blogs, students can present and reflect their working progress and experiences, and to communicate with other stakeholders. Blogs can also contain commentaries, descriptions of events, links and other media files. Wikis, in turn, are typically used to create collaborative websites, to power community websites, for personal note taking, in corporate intranets, and in knowledge management systems. They can also be used for collaborative work. Group blogs and discussion forums/boards can be used to discuss a particular topic. Finally, the social networking services can be used to link people who share the same interests and/or activities, such as work abroad experience, with one another.

After the work placement

In this phase, the student returns to his/her home institution. The actual placement is completed. Final evaluation of the work placement, the student and the company-HEI partnership will be done. The student receives a letter of reference or another type of evidence for his/her activities and writes in his/her turn a final report on the work placement. The long-term career guidance of the student begins. When the work placements are integrated into the institutional curricula, students will also earn credits for them. Also in this phase, the student's personal reflection continues. Indeed, it is important that the student returns to his/her experiences in as much detail as possible, attends to his/her feelings building on positive feelings and addressing negative ones, and re-evaluates the experiences linking new learning to old (Boud, 1993).

After the work placement, e-portfolios could be used to present the student's work (results and discussion), and audio- and webconferencing to conduct the final evaluation discussions. Social networking tools, in turn, could be used to help people to stay in contact with one another after the placement, whereas file sharing could be used to share digital files (slide shows, videos, etc.) over a network. Social bookmarking could be used as a part of an e-portfolio as a reference list. It is a web-based service to store, organize, search and manage bookmarks on the Internet (Op de Beeck et al., 2008).

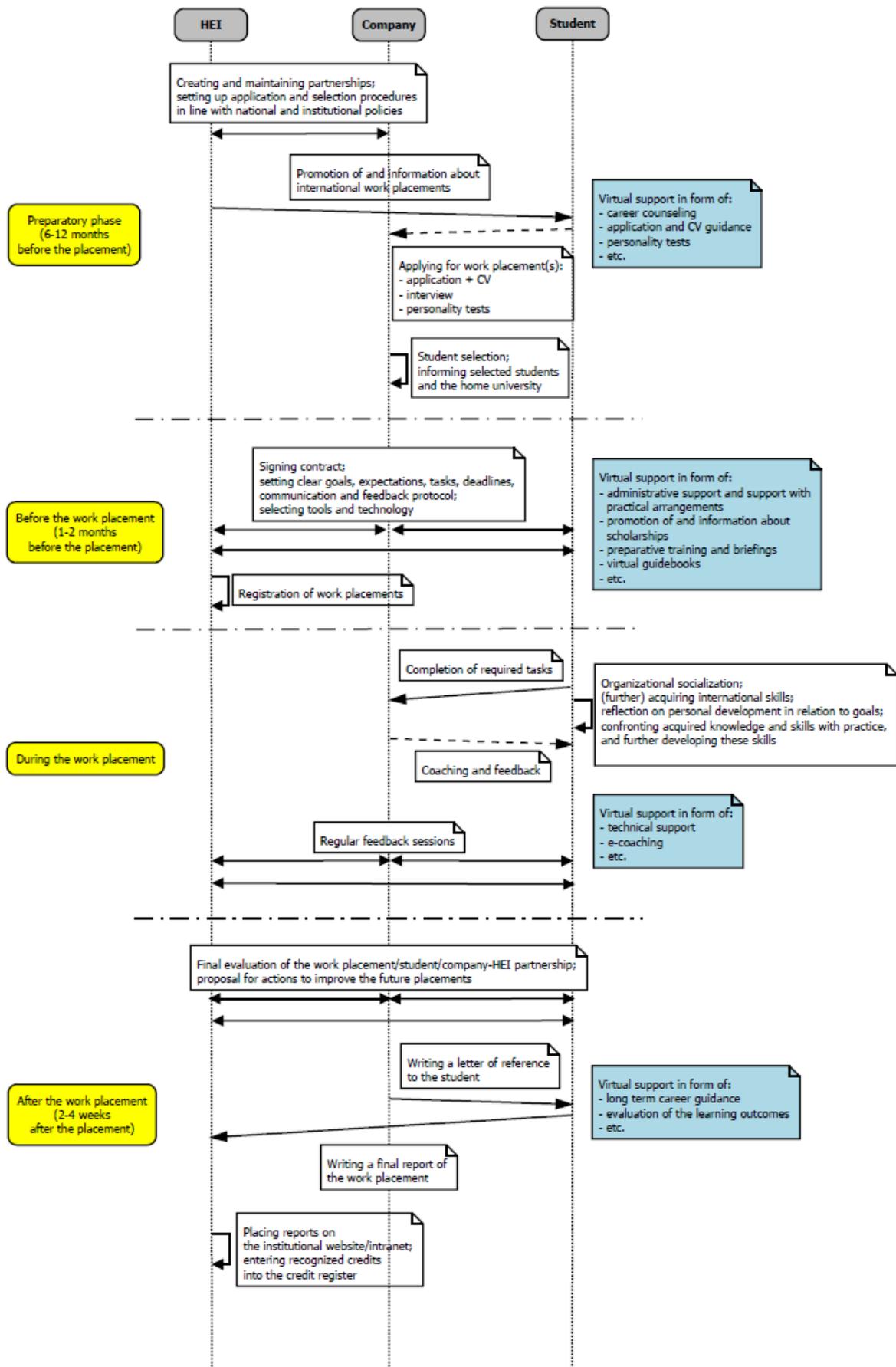


Figure 2. Communication model for a HEI driven virtual or virtually supported work placement.

5 Conclusions

Approaches to the scenarios of virtual and virtually supported work placements vary according to the specific characteristics of each work placement. These characteristics are influenced by factors such as requirements in the curriculum; the number of HEIs, companies and students involved; students' individual attributes (skills and abilities) and needs; the role of virtual and international mobility; the extent of support; as well as the tools and technologies used. The different factors also have an effect upon one another.

The initial framework introduced in this document will be implemented in and tested through 18 pilot projects conducted in the framework of the EU-VIP project during 2010–2011. The results of these pilots will be used as a starting point for the development and fine-tuning of this framework into definite guidelines and recommendations.

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