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The adaptation of virtual learning environments (VLEs) into academic and business cultures has increasingly become a dominant factor in their operation. Often seen as avenues providing flexible solutions and attributing to new approaches in maintaining and applying learning opportunities, the implementation of e-learning has the potential to provide new approaches to satisfy the requirements of learning. However this powerful tool introduces an avalanche of ethical and social aspects to contend with.

An incentive for the deployment of these environments is the promise of advancements provided through technology, such as improved usability and communication. There should be focuses on both the ethical and social aspects to deploying an educational community. Although their application is usually in a supportive role, alongside conventional teaching practices, the additional resources to maintain these environments can sometimes outweigh practicality and be limited when utilised. These environments should be seen as the opportunity to manifest wisdom and skill through innovative approaches and provide participants with efficient methods to self-reflect via each other. Are advancements in technology truly producing innovative and unconventional approaches, which provide a seamless transition from conventional classroom teaching? This paper examines the problems associated with the deployment of virtual learning environments to sustain knowledge through collaborative and adaptable learning and focuses on the problems associated with supporting soft skills online.

Keywords
Virtual Learning Environments, Adaptive Learning Environments, Collaborative Learning

Disciplines
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Adaptable and Collaborative Virtual Learning Environments Supporting Soft Skills

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Abstract

The adaptation of virtual learning environments (VLEs) into academic and business cultures has increasingly become a dominant factor in their operation. Often seen as avenues providing flexible solutions and attributing to new approaches in maintaining and applying learning opportunities, the implementation of e-learning has the potential to provide new approaches to satisfy the requirements of learning. However this powerful tool introduces an avalanche of ethical and social aspects to contend with.

An incentive for the deployment of these environments is the promise of advancements provided through technology, such as improved usability and communication. There should be focuses on both the ethical and social aspects to deploying an educational community (Gerdsen, 2001). Although their application is usually in a supportive role, alongside conventional teaching practices, the additional resources to maintain these environments can sometimes outweigh practicality and be limited when utilised. These environments should be seen as the opportunity to manifest wisdom and skill through innovative approaches and provide participants with efficient methods to self-reflect via each other (Barajas & Owen, 2000).

Are advancements in technology truly producing innovative and unconventional approaches, which provide a seamless transition from conventional classroom teaching? This paper examines the problems associated with the deployment of virtual learning environments to sustain knowledge through collaborative and adaptable learning and focuses on the problems associated with supporting soft skills online.

Keywords

Virtual Learning Environments, Adaptive Learning Environments, Collaborative Learning, Soft Skills, Retractable Resources, Transferable Learning, Adaptable Learning Approaches, Scenario Objective Learning

1. Introduction

In respect to the conventional practices of teaching, the application of knowledge through VLEs adopts the same characteristics as classroom interaction but substituted through electronic counterparts. The transition and utilisation of these environments is becoming easier as our lives become more dependent on technology and, inevitably, our way of thinking changes to accommodate its application as it develops around us.

The successful operation of these environments is generally contributed through support mechanisms, the development of hypermedia and careful allocation of resources (Laurillard, 2003, p183 & Dix et al, 2004 pp 758-761), a factor recognised within many aspects of development. Improved outcomes can generally be associated with greater input in development and maintenance.

Neglecting the benefits and potential offered through online learning systems could be considered irrational. Fry et al (2003, pp152-155) demonstrate that the potential of these systems can lead to great success but this can be dependent on the type of VLE used and its objectives. The application and utilisation of technology is unprecedented, but purely adapting conventional approaches may neglect the true potential on offer. The primary utilisation of these environments is the provision of resources online, but as technology advances we continually maintain conventional approaches through new mediums by producing virtual replications. These have an impact on usability, as new methods introduce new implications for the way knowledge and training are acquired and perceived.

It is important to remember that flexibility, learning styles, costs and integration are all issues when utilising these environments (Fry et al, 2003, pp 148-161). The transition from paper to pixels provides new opportunities to deliver new approaches but these are worthless if they do not satisfy the requirements of sustaining efficient learning.

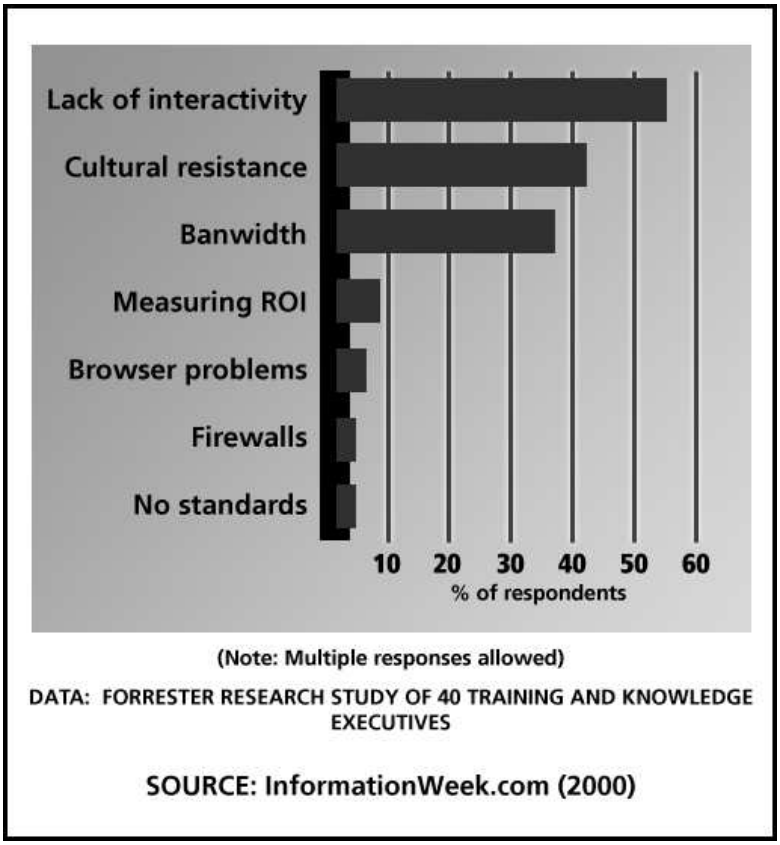

Figure 1: Common Impediments – What obstacles limit online training?

A learning environment focuses on the acquisition of knowledge through engagement, participation and interaction. The implementation of a virtual learning environment aims to support learners within an online environment that provides a globally accessible learning resource supporting characteristics of the conventional classroom. . However, there are greater implications associated with its deployment. These learning environments cannot entirely substitute for conventional methods as there are numerous factors that affect their execution such as psychological, sociological, human computer interaction and cultural impacts (Fry et al, 2003, pp 148-161). The utilisation of a VLE is functional purely as a

method of managing learning resources but any provider of these should also understand that the approaches used to deliver them electronically may be restrictive. It is ignorant to see VLEs as a quick solution to providing learning material online, without some form of structure considered for the submission of resources and consideration of how it will be utilised (Fry et al, 2003, pp 159-160).

The integration of these environments, whether within an academic or business context, requires the availability of easily accessible information for participants. The web has increasingly been successful in providing many aspects of learning and training but its utilisation is generally associated more commonly with the IT industry (IW 2007).

A virtual learning environment detaches participants from the classroom where soft skills and human interaction would be included as a fundamental component. The appliance of interactivity in both aspects of resources and within the community contributes to one of the most common impediments in establishing a rewarding e-learning experience (Figure 1).

It is imperative for the effective utilisation of these approaches that consideration is consistently given to the innovation of methods promoting interactivity and building on the community aspect. The route to achieving this is examining the factors that contribute to learning components restricting the adaptation of approaches, in this instance the detachment of soft skills.

2. Aims of the paper

Technology provides the possibility of changing a learning environment, thereby customising and diversifying a learning community. This is possible through the flexibility and customisation properties found within the application of technology, through the provision of innovative models that deviate from the “no significant difference” phenomenon (Twigg, 2003). In addition, these environments are versatile and adaptable as well as having the potential to support characteristic flaws. The application of change can also be applied to the user, tailoring the environment to meet their individual needs.

Contributions to these environments can promote new approaches to future learning and it is important that further additional features are both compatible and sustainable in the future. Change is common within technology and this applies also to a diverse environment. Any developments should serve the required functionality while also preserving some form of adaptability, thereby minimising the risk of wasted resources.

The focus on supporting soft skills within electronic environments is investigated in this project through research and support provided through collaborative and adaptable approaches.

Users are the fundamental component in the operation of VLEs and the promotion of collaboration of learning through resources and other users helps to simulate conventional classroom approaches. Technology has the potential to offer new and innovative ideas that are not possible through conventional practices and it is this incentive that provides a vital advantage. Development of ideas and services is to be examined as a provision of improving the transition of learning approaches into an online environment.

This paper will elaborate on the development of four concepts that are being investigated to support the needs of both business and academia currently concerned with problems adapting soft skills in virtual learning environments (MDP, 2007). All four subject areas are interrelated through the dependency of each other's resources.

- Retractable resources - The provision of services and resources in an electronic environment that can be removed and retained by the user after completion
- Adaptable learning approaches - Changing the environment to meet the needs of the individual through flexible learning approaches
- Transferable learning - Determining the strengths and weaknesses of participants and transferring knowledge to others through automated evaluation
- Scenario objective learning - Adaptable learning resources defined by collaborative intervention

3. Acquisition of new virtual learning incentives through holistic evaluation

Open learning utilising virtual environments as a vehicle to deliver content is increasing in popularity among many businesses and academic environments. In some cases these avenues are adopted with the notion of simply following the actions of fellow institutes and corporations without carefully considering their application. As a result of this these new environments offer nothing in value over conventional approaches and in fact provide additional problems (Twigg, 2003). E-learning provides access to a variety of new approaches but only through the innovation of the educator. This now questions the active role of learning and how technology can be used to enhance the processes involved as the boundaries of the classroom are quickly disappearing.

In many situations a solution to fulfilling requirements of online education can become quite complex. In order to justify new approaches it is important not to build up expectations too highly. Success is usually derived from the ability to deliver resources that have specific value and understanding for students (Fry et al, 2003 p160 & Laurillard, 2003 pp201-202). New users always bring with them some degree of knowledge of other online services. The utilisation of this knowledge can assist with the interaction of the environment by building on familiarity (Dix et al, 2004 pp263-264). Considerations of the application of new resources should be a priority to ensure that their addition maintains functionality without having implications for established methods of operation.

It is inevitable that when something new is introduced there can be a stigma attached. Dix et al, (2003, p261) states that familiarity is the ability to build upon knowledge and experience when encountering a new environment. Increasing the level of familiarity will reduce the risk of change and opposition. One of the most predominant difficulties in the integration of any environment can be a reluctance to change. The complexities associated with technology can intimidate users. The implications from this have an impact on the successful application of HCI and usability. With the adaption of conventional approaches into virtual form the requirement for support mechanisms is still apparent. Even though approaches can remain the same, changes to their method of delivery will always have a requirement for some form of user support. Technology can sometimes provide barriers to the utilisation of information within a virtual environment, as it loses its identity through the transition process. This does not mean that the functionality and potential of these services is outweighed by conventional teaching practices and cannot efficiently be adopted electronically.

The implementation of an online environment requires the identification of viable options to improve communication and the overall attributes of learning. For example, is it appropriate to replace conventional methods or are the attributes offered only successful when adopted along with current teaching practices? The greatest potential is to be achieved through the application of technology to change the way we learn through methods that are unique based on the learner's characteristics. Changing the perspective on how we introduce new learning approaches from a technical aspect may provide a more efficient learning ground through practices customised to the demands of the learner and environment.

The idealism of providing additional functionality to web interfaces like those present in virtual environments will undoubtedly add to their complexities. As technology evolves around us so does its complexity but not necessarily its usability. These complications are generally absolved through approaches undertaken by interaction design methods to ensure that these inhibitions are discouraged by providing improved usability (Dix et al, 2003 pp192-223). This provides sufficient usability through simplicity and efficient operation. As technology advances and automation becomes an integral part of development it is the developer's role to maintain simplicity for the user through the utilisation of such approaches. Even though these environments may increase with functionality and complexity the components of technology can mask this through design, management and automation. The outcomes in relation to this project are found through the dependencies of newly integrated components on a VLE. Their inclusion aims to promote education through adaptive methods integral through all aspects of the environment. Simplifying processes by minimising the delivery of unnecessary resources and encouraging collaborative learning.

4. A structure to supporting adaptable and collaborative virtual learning environments through alternative approaches

The ambition and focus of this project was determined by the needs of both academic and commercial organisations (MDP, 2007). Their reluctance to adopting e-learning encouraged by limitations and difficulties to provide open learning which effectively supported soft skills online.

E-learning is quickly becoming a commodity that is featured in many academic and training backgrounds and this only accelerates the need for the implementation of revised approaches. The dependencies in attaining a solution are reliant on the practicality, costs and availability of resources thereby attributing to the depth of investigation and development of this project.

In an effort to minimise impending costs open-source software has been used as the foundation of the development and testing stage. However, this has dictated programming languages and methods that may be used. Moodle ('Modular Object-Oriented Dynamic Learning Environment', an open-sourced VLE) will provide the basis of an online environment to test various soft skill components. Moodle is delivered through PHP and SQL technologies but has the flexibility to modify and utilise other commodities (i.e. Flash and external links providing the option to develop outside the boundaries of the environment). Furthermore there is an increasing development of commercial products offering the functionality of soft skills; however these still do not meet the requirements of the demands placed on both corporate and academic bodies involved with this project. In order to satisfy the requirements for establishing the objective of improving virtual learning environments planning is essential. Outcomes from the project are to follow a specific cycle which ensures the overall objective is preserved. Any outcomes are maintained through a process of

planning, investigation, design, implementation and maintenance. Both paper-based and electronic prototypes permit the acquisition of data to determine the best practices to use.

Following protocols throughout the early stages of research permits both the company and academic institutes to identify what areas of development would be beneficial. Technology evolves quickly and because of this it was decided that both research and development should run in parallel. This provides opportunities to adapt new approaches through the acquisition of research quickly and efficiently. Once an attributing factor has been identified it would be adapted immediately and its introduction evaluated.

5. Issues and limitations

As with any project the execution of research and development must be structured. It is necessary to identify the fundamentals and significance to the operation of a virtual learning environment and the needs associated with it. E-learning poses further difficulties from the wealth of attributing factors to its operation and understanding. With so many approaches identifying which one would be most beneficial can be difficult. The wealth of concepts that could be introduced can be overwhelming and indefinitely endanger the project by obstructing its focus. To refrain from this a framework of potential practices is developed as a blueprint, derived from initial research and requirements of both academic and corporate bodies. The contribution of this helps define the structure of an environment and aid in determining priorities for future development and expansion. The overall scope can be daunting and recognising key components can identify the most appropriate direction and impact on associated workings.

Restrictive application for the testing of prototypes can be a concern as the allocation of these requires long testing periods to produce justifiable results. Their success is justified through satisfying and qualifying the adaptation of conventional approaches using new methods of delivery that support soft skills through adaptability and collaboration.

Even though electronic environments can be modified and manipulated to adapt there are underlying issues that can impede their functionality.

- Dependency of online capabilities - Accessibility of resources is fundamental to the functionality of the operation of virtual learning environments. One of the key contributions to the success of online learning is attributed to its global application. However if the capacity of providing these services (for instance, hosting) should fail then there are implications of losing the services entirely. There are alternative avenues to ensure that these potential hazards are minimised but they can be expensive.

- Human detachment - There is inevitably the detachment of human contact through the introduction of virtual learning environments although these can sometimes be supported through other approaches, such as web conferencing. Different subject areas have different requirements. With the physical component absent it is still complicated in certain situations that are dependent on some form of physical interaction, for instance the operation of a chemistry experiment (Fry et al, 2003 pp273-274). Detachment is one of the factors that contribute to the problematic utilisation of soft skills.

- Support mechanisms - Support is often an essential commodity in any environment but the difficulties within a virtual application can pose different requirements. There are concerns of attitudes to technology and user perception of managing these environments effectively. There is a disconnection of physical contact and natural interaction within virtual environments. Furthermore, the adaptation of new approaches specifically when utilising technology can detach the user from conventional human support methods encouraging social isolation (Eastin & LaRose, 2005).

- Support mechanisms are not necessarily related to just the operation of the environment and content. The detachment from a physical environment can often remove human support factors from the classroom such as emotional support (soft skills). This can be difficult to replicate and may have an impact on the retention of programmes utilising virtual environments, such as open learning.

- Development of material and implementation into the environment - An integral part of the operation of learning environments is supported through the performance and validity of resources that are included. In order to support any form of learning the dependency of available resources can attribute to the rate and standard to which someone can acquire knowledge. The development and maintaining resources within these environments is both time consuming and costly. (Twigg, 2003 & AAUP, 2000)

- Many commercial companies are now investigating new approaches to providing solutions to developing content that is quick and inexpensive to implement within electronic environments. The potential to acquire profit through the implementation of virtual learning environments can often be prioritised over the quality of resources (Gerdsen, 2001 p27).

- Cultural implications – E-learning is accessible globally but consideration is required of the approaches to how this is applied when confronted with different cultural backgrounds and different learning attitudes. Collaborative learning is dependent on the interaction between participants of an environment and the manifestation of differences could break down these relationships. This is important to consider when VLE's operation is associated with open learning, particularly when participants are located around the world.

- Privacy and the acquisition of data - The requirements in maintaining some of the solutions towards adapting soft skills into environments have a heavy dependence on the acquisition of data. The application of adaptability will be promoted through the analysis of interaction and user ability but to do this some formal form of data collection is necessary. The storage and availability of this information can have possible implications on the effectiveness of the environment if the user is reluctant for this information to be collected.

6. Providing solutions through alternative approaches

6.1 Retractable resources

Even though there is an abundance of services available through the web it is difficult to see how VLEs are adapting this effectively to encompass the social aspect of collaborative learning. Our interaction with the Internet is no longer solely based on the acquisition of knowledge but has included itself into our social existence through collaborative sharing and entertainment. While virtual environments are continually having a growing presence in academic bodies their extension of a community is only relational in an academic sense. Over recent years the Internet has rapidly expanded from a purely intellectual commodity to successfully incorporating social aspects through online communities such as YouTube, Flickr and MySpace. The adaptation of these social resources into virtual learning may encourage possibilities to extend these communities to embrace both educational and social aspects. Their adaptation has the potential to build on existing familiarity within learning environments by transferring resources which are already well established within the public domain. This has further benefits by fulfilling components required within these environments without the effort of establishing a fully functional community from nothing. The adaptation of these services into virtual environments grants the user their own identity and avenues to promoting their own individuality among each other.

The integration of web services obtained from outside the virtual learning environment may promote the learning needs of users and social outcomes. This can be de-motivating especially when accessibility to resources is usually withdrawn on completion of a programme or course. Retractable resources permit the adaptation of an environment to link directly to an external source or the registration of one.

Overview:

- Social aspects that can be adopted from an external source and utilised within an educational community (i.e. Flicker, web blogs and so forth).
- Promoting an identity with users within the online community by promoting social events to promote interaction and discussion. Established through team-building exercises.
- Accessibility to services independent from the virtual learning environment.

6.2 Adaptable learning approaches

Technology has provided us with a podium to broadcast our own opinions and perspectives and the freedom to choose what we want, although this freedom is somewhat restricted when learning is applied in the classroom. The application of learning can be dependent on the educator and each individual can be conditioned into their preference of approaches and knowledge. Each participant has their own learning style which attributes to the quality of their learning and this can vary depending on the characteristics they support (Fry et al, 2003 pp17-23). The flexibility of conventional environments simply does not permit the adaptation of various learning styles based on its restrictions. A class may contain several different learning styles but it is the learning style of the tutor that dictates the approaches and methods of how information is employed.

The flexibility of virtual learning can provide a one to one basis of education and is highly adaptable. The techniques used for learning can be customised to take this into consideration

and provide a learning experience that is tailored to the individual by providing resources based on their own characteristics.

A learning experience of this nature would need to define the characteristics of each individual and maintain evaluation in case these should this change in the future or prove to be unbeneficial. Adaptable learning approaches offer the prospect of enhancing learning by providing direction to educational resources that can develop strengths while improving weaknesses.

Overview:

- Methods to support users' unique learning style by providing evaluation of learning material and its effectiveness on different learning styles.
- The identification of best practice of learning approaches from evaluation of user characteristics through evaluation of problem based exercises.
- Adaption of resources to cater for individual requirements and learning styles, by reviewing success rate of the application of resources and rating them.
- Monitoring of participants' progression through evaluation methods and determination of revised application of resources.

6.3 Transferable learning

Every individual has different strengths and weaknesses. Collaborative assignments can draw upon these to utilise them to different advantages. Conventional learning approaches aim to educate through the use and exchange of knowledge and resources. The action of debate often provokes the exchange of ideas but promotes the interchange of knowledge among those participating. The trade of information can provide viable avenues to different perspectives of understanding but it is the uniqueness of the individual that fuels these processes.

The application of knowledge and understanding can be delivered from education or experience but it is likely that their levels will differ from person to person. The sharing of someone's strength of knowledge can be used to enhance the weaknesses of others and provide some form of transferable knowledge.

Boud, Cohen & Sampson (2001) identify that it is possible to create a successful collaborative computer-supported learning environment to transfer knowledge even though the approaches can be considerably different from conventional methods. In order to sustain a successful collaborative environment the application of transferable knowledge needs to adopt some conventional methods which can be successfully applied through role-play simulations. The acquisition of knowledge through this method is dependent on the successful pairing of strengths and weaknesses. Furthermore the environment promotes various social aspects and collaborative objectives to try and embrace the community.

Identifying the levels of knowledge must be maintained through either observation or evaluation to identify the levels of understanding and the extent of knowledge required to satisfy learning objectives. Some form of catalyst or event would be required to exchange this knowledge through collaborative approaches. With the potential to provide flexible methodologies in the allocation of resources, new objectives could be remoulded to provide structured learning supporting a collaborative exchange of knowledge within a given area.

Overview:

- Support mechanisms derived through pairing strengths and weaknesses through report methods and testing in collaborative environments.
- Promotion of collaborative learning and soft skills through experience encouraged through team building and collaborative events.
- Weighting mechanisms – identification and management of levels of knowledge and understanding. Used to identify appropriate pairing of strengths and weaknesses.
- Reliant on scenario objective learning to provide a form of catalyst to provide a means of interacting users and the transition of knowledge.

6.4 Scenario objective learning

Virtual learning environments can provide ideal learning opportunities that can be dynamic in form. Boud & Feletti (1998) concluded in their research into problem-based learning that it is a powerful means to educate. They clarified that in order to acquire the benefits from it new approaches were required that could enhance a community promoting creativity and constructive thought.

A versatile environment can change its approaches through interaction and encourage development in areas that require improvement. Scenario objective learning aims to do this by providing different learning paths that are modified based on the application of knowledge and understanding from participants.

The ability to modify circumstances presented through learning resources can aid the integration of soft skills. The possibilities of changing outcomes of events based on actions provide a unique application of knowledge from experiences. The appliance of learning opportunities that endorse the exchange of knowledge between participants has proved enduring but must be used cautiously as there is a variable value to it (Boud, Cohen & Walker, 1997 p167). Dewey alerts learners 'that all genuine education comes about through experience does not mean that all experiences are genuinely or equally educative'.

Scenario objectives primarily serve as a method of delivering resources and providing opportunities of testing one's knowledge of them. By focussing soft skill approaches it provides the key operational component to 'transferable learning'. Scenarios operate similar to decision trees, a choice is made and then a reaction or consequence follows from the actions applied. A scenario aims to provide various learning objectives through the application of knowledge. If this fails, participants are directed to personalised resources focused on delivering content aimed at improving their personalised learning.

Overview:

- Catalyst component for the execution of 'transferable learning'.
- Promotion of collaborative learning and soft skills through experience and interaction.
- The information obtained from evaluation processes helps to change the environment to support the improvement of participants' knowledge and understanding.
- Collaborative interaction between groups and individuals by applying global scenarios that have competitive objectives. Encourages debate and additional perspectives of understanding.

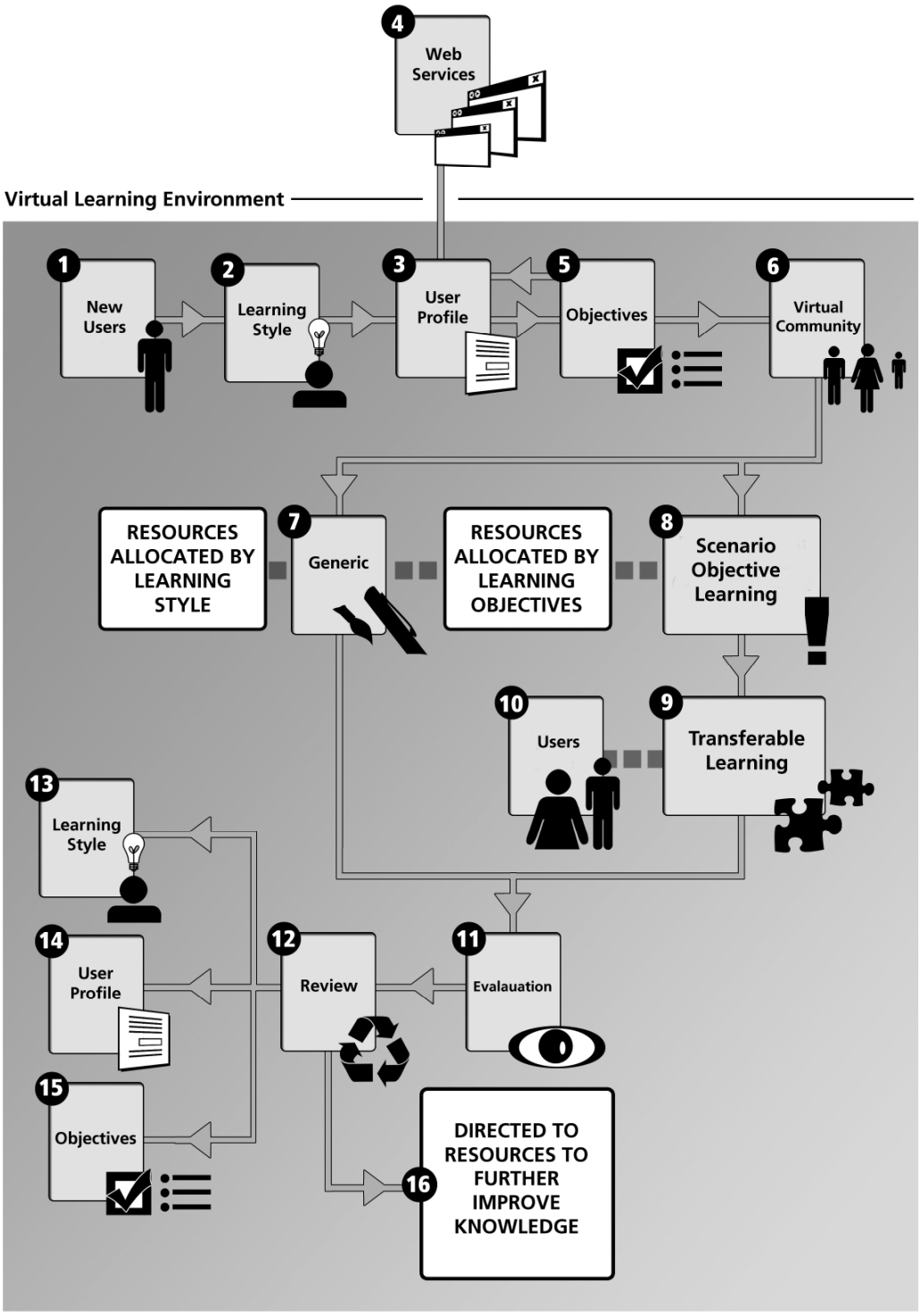

Figure 2: An overview of the flow regarding a user's learning experience

Although the environment offers new approaches to utilising experience and resources it is important that more common methods of e-learning are also implemented as an alternative approach. Figure 2 provides an outline of a concept that has been modified for supporting online learning. The flow and processes reflect current methods adopted by conventional paper-based methods performed by MDP in their own open learning programmes which are currently paper-based. The adaptation focuses on delivering learning categorised by learning

styles supporting each individual of a virtual community and introduction of a scenario learning event which provides a platform for interaction and learning.

The process undertaken when a user is utilising the proposed virtual learning environment:

1 New users are registered into environment
2 A user's learning style preliminarily determined through formal evaluation.
3 Learning styles are included in a profile for further identification. Users are asked to develop profile before introduction to community.
4 Web services can be incorporated into the environment to provide additional resources and social aspects. As these are external they are available when access to the learning environment is terminated.
5 The objectives of learning are established by either a tutor or the individual. This will also reflect the types of resources made available. These are also added to the profile.
6 Introduction to the virtual community
7 Conventional approaches of learning adapted to suit virtual requirements
8 Scenario based learning that examines the needs for objectives and delivers scenarios that will require the application of resources provided through the environment. Scenario is used to investigate various aspects of learning styles as well as learning needs.
9 Utilisation of the scenario to promote the exchange of knowledge to form a solution to a problem.
10 Users introduced to the scenario are introduced to others based on their strengths and weaknesses.
11 Evaluation of process to determine the capacity in which user's knowledge was applied through specific criteria.
12 Reviewing the data collected from the evaluation process permits the identification of the attributes of user's interaction, meeting learning needs and the effectiveness of their learning style.
13 Learning style is updated based on feedback from evaluation and allocation of resources is conducted accordingly.
14 User profile is updated as a record of achievement and future evaluation to identify areas of progression.
15 Objectives are reviewed and adapted to the environment accordingly to reflect the accomplishment of objectives.
16 User is directed to most appropriate resources should evaluation determine insufficient acquirement of knowledge. The environment is then changed to provide new challenges to re-test and apply this knowledge.

The process of a student's learning is iterative. Once completed the student is returned back into the virtual community to reflect on their achievements for discussion and deliberation.

7. Conclusion

Virtual learning environments provide versatile opportunities that can satisfy problems associated with the application of soft skills online. However, establishing a truly successful learning environment must rely on methods different from conventional approaches. These approaches must satisfy the demands of replicating aspects of human interaction that maintain learning resources that are dependent on soft skills.

Many large software organisations have identified that these are areas that need to be satisfied while also presenting lucrative opportunities in doing so. Adobe (2007) is a market leader that has developed e-learning software focusing on the adaptation of soft-skills. Even with the market increasingly accommodating the requirements of the growing e-learning community, it is still difficult for company and academic bodies to fully satisfy their requirements. Organisations such as MDP have employed various techniques to provide e-learning that supports soft skills and have identified that these approaches can be costly and unjustified. In many cases there is a considerable demand for time and resources to support the diversity of learning that is provided to students.

The future direction and development of this project is currently focussed on how users interact within online environments and establishing support mechanisms that can help maintain learning. It anticipated that by promoting the interchange of knowledge among peers will elevate some of the demands in maintaining learning resources online.

Currently paper-based prototypes have been developed to support soft skill learning as a means of testing scenario driven events that are designed to promote the interchange of knowledge. The future expansion of this will incorporate similar methods but modified to be included within a virtual learning environment.

In order to satisfy the execution of these events it is necessary that learning is conducted in groups to permit the interchange of knowledge. It is important that a participant's knowledge is also monitored to identify if their learning objectives are satisfied and this is done through evaluating participants at intervals through either online testing methods or formal exams. If a lapse in knowledge is identified then participants are directed to the appropriate resources which usually entail methods utilising conventional approaches (i.e. reading a topic area, discussion thread and so forth).

Future developments of this project will investigate the feasibility of providing adaptable learning objectives. Each objective will focus on key components of an individual's knowledge modified by the outcomes of their interaction with problematic scenarios and understanding of situations. The scenarios are designed as a catalyst to promoting interactivity and discussion through some form of problematic situation and by evaluating users in evaluating how their knowledge is applied. However, there is still a need for human evaluation because of the sensitivity and complexities of formal methods of evaluation.

The processes to maintain these resources and their application have the potential to utilise soft skills through new approaches to create bespoke learning. Furthermore the adaptation of the environment can provide access to resources maintained externally, reducing the maintenance of the environment and providing the expansion of a community into both an educational and social domain.

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