

Technology Enhanced Learning: Virtual Realities; Concrete Results

Case study on the impact of TEL on learning

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Abstracts

English

Technology Enhanced Learning is a feature of 21st century education. Innovations in ICT have provided unbound access to information in support of the learning process (APTEL, 2010; Allert *et al*, 2002; Baldry *et al*, 2006; Frustenberg *et al*, 2001; Sarkis, 2010). LMS has been extensively put to use in universities and educational institutions to facilitate the management of learning at more than one frontier (Weber *et al*, 2001; Kraemer *et al*, 2001). The second wave of computer mediated communication (CMC) made continuous communication possible and unrestricted to space or time (Simon *et al*, 2002; Nejdil *et al*, 2002).

With this surge, brought about by advances in technology, concerns relating to *pouring resources into unpredictable venture* (Baldry *et al*, 2000; Sykes *et al*, 2008), necessitated a review of the educational experience and outcome (Jonassen *et al*, 2003; Richards, 2004; Kress, 2003, Barab *et al*, 2004) to assess the direct impact of technology enhanced learning on learners.

The study examines the outcome of pedagogic practices in the digital age, in pre and post technology supported applications (Al-Khatib, 2009). The aim is to identify quantitative and qualitative indicators that relate to applying technology enhanced learning. Participants are senior students of linguistics doing project research and utilizing virtual forums to facilitate dialogue and debate on set tasks. Learners' performance was recorded quantitatively and qualitatively for the period of two consecutive academic semesters

The outcome of the study identifies cognitive, reflective, analytic, synthetic, dialogic, technical and sociocultural benefits for the participants using Technology Enhanced Learning (TEL) practices.

Arabic

التعلم المدعم بالتكنولوجيا: بين الواقع الافتراضي والنتائج الملموسة

دراسة في تأثير التعلم المدعم بالتكنولوجيا على المتعلم

التعلم المدعم بالتكنولوجيا هو من أبلغ سمات القرن الحادي والعشرون، فقد وفرت الابتكارات في تكنولوجيا الاتصالات والمعلوماتية إنفتاحاً غير محدود في (فمن 2010 وسركيس 2001، فرستبرغ 2006، بالدري 2002 ألرت، APTEL 2010) مجالات المعلوماتية والاتصالات لدعم عملية التعلم نتائجه أنه تم وضع نظام تكنولوجي لإدارة التعلم على نطاق واسع للإستخدام في الجامعات والمؤسسات التعليمية لتسهيل العملية التعليمية على أكثر من (وقد أدت الموجة الثانية من أنظمة التواصل عبر تقنيات الحواسيب إلى تمكين التفاعل والتواصل الغير مقيد 2001، كريمير 2001 نطاق (فير بالعوامل الزمنية أو المساحية، بشكل مستمر

وفي محاولة إعادة تقييم للنتائج المباشرة لهذا التوجه على المتعلم، وللرد على المخاوف التي أثبتت حول "ضخ الموارد والإمكانات المادية والأكاديمية في (في مراحل ما قبل وما 2009)، تبحث هذه الدراسة حالة تربوية في العصر الرقمي (الخطيب 2000 مخاطرة غير محددة العواقب" (بالدري وآخرون بعد التعلم المدعم تكنولوجيا لتحديد المؤشرات الكمية والنوعية ذات الصلة بالنتائج المتلازمة مع الحالة والمتعلقة بآثار التعلم المدعم بالتكنولوجيا

والدراسة تتبع نتائج إنخراط مجموعة من طلاب اللغويات في منتديات افتراضية خاصة بمجموعات عمل، للتواصل وتبادل الطروحات والأفكار، لإستكمال مشاريع أبحاث ميدانية. وتشمل الدراسة سجلات لآداء الطلاب الكمي والنوعي، خلال فترة دراسة الحالة، الممتدة لفصلين أكاديميين متتاليين

تعكس النتائج الأولية الأثر الإيجابي للتعلم المدعم إلكترونياً، من حيث تحقيق مستوى أعلى في نتائج الإمتحانات النهائية، إزدياد قدرات الإدراك والتحليل والحوار والمبادرة في المتعلم، إلى جانب فوائد إجتماعية وثقافية وأكاديمية تلازمت مع الممارسات المبتكرة والمرتكزة على مفاهيم تربوية لعملية التعلم المدعم إلكترونياً

Keywords

Technology enhanced learning (TEL), blended learning, cerebral learning, virtual forums, learning management systems, hybrid system of academic provision, quantitative evidence, qualitative evidence, prosumers.

Topics

Digital learning experiences, technology driven initiative with pedagogic aims, conventional approaches, profound transformations in the learners and the learning process

Biography

Hayat Al-Khatib is Associate Professor at the Arab Open University – Lebanon. She received the degree of PhD from the University of London in 2002. Al-Khatib is member of the British Association of Applied Linguists (BAAL), Research Support Group at the University of London, and the Association of Professors of English and Translation at Arab Universities (APETAU).

Hayat Al-Khatib is active in regional and international conferences, with an interest in linguistics, sociolinguistics, language teaching and education (Britain, Spain, Belgium, Greece, Cuba and Australia). In addition to teaching and research, Hayat Al-Khatib has published works in a number of national and international refereed journals as well as chapters in academic books and conference proceedings in the fields of applied linguistics and open education. She is currently Head of the English programme at Arab Open University – Lebanon, editor at the Linguistics Journal Editorial Board (BAAL), editor-in-chief of CALR linguistic journal, and chair for the UK-based AOU courses U210A and U210B.

Introduction

The need to conduct research on technology enhanced learning is growing as the world moves to IT supported education at more than one frontier (APTEL, 2010; Weber *et al*, 2001; Kraemer *et al*, 2001). Debates develop as regards evidence on its direct impact on the learners and the cognitive, reflective, analytic, synthetic, dialogic, experimentalist and sociocultural consequences (APTEL, 2010; Allert *et al*, 2002; Baldry *et al*, 2006; Frustenberg *et al*, 2001). Calls have identified the need to assess the role of ITC in transforming the learning experience, beyond the criteria associated with traditional teaching (Simon *et al*, 2002; Nejdil *et al*, 2002).

Sykes, Oskoz and Thorne (2008) argued that the use of new technologies in education can have a number of profound advantages. Such transformations may lead to the evolvment of a new category of "prosumers"; learners that combine the roles of producer as well as consumer in the learning process.

Sarkis (2010) in a plenary address to a congregation of academics and researcher in Technology Enhanced Learning (TEL) forum, outlined the results of 20 foresight studies on the future of learning in the digital age. The studies predict that "learners will invest more in the cerebral aspects of learning" as a result of technology supported proactive learning.

The PROLEARN network of excellence in professional learning, funded by the European Union in the 6th Framework reviewed a number of innovative models of interactivity in e-learning environments, put forward by 170 research institutions and combining interactive media and hands-on experiences. The evaluation confirms the ongoing need to stimulate technical innovation and to utilize research results to generate transfer of knowledge. The 6th Framework calls for more interaction between research and development at this phase (6th European Framework, COM 2003/226 final).

Baldry and Thibault (2000) narrowed the focus to studies that can confirm whether effective learning is taking place as a consequence of TEL. They called for the analysis of samples of student production as the scarcity or lack of such documentation has allowed traditionalists to voice concerns that resources are poured into an "unpredictable venture" where "the ultimate gauge of this (proclaimed) effect, the students, are not consulted ... and the analysis of samples of homework etc, is not conducted either" (ibid.p.18).

As research takes on more interest into technology enhanced learning with more than ten international conferences in 2010 devoted to the subject, it is becoming mandatory, for researchers, to conduct comparative studies that would identify the effect of technology enhanced learning and provide concrete evidence on its outcome (Jonassen *et al*, 2003; Richards, 2004; Kress, 2003, Barab *et al*, 2004). In a recent TEL consortium, hosted by the Arab Open University in Lebanon (June 2010) , universities using technology in knowledge management, assisted learning, business processes and work environments, calls were directed at the need to come up with explicit evidence on the effect of technology enhanced learning on participating learners.

The context of the study

The study examines pedagogic practices in the digital age through following up senior students' work that involves utilizing TEL in completing set tasks in their project work. The study is conducted at the Arab Open University in Lebanon.

The Arab Open University- Lebanon is one of the pioneering universities in the Middle East that implement technology enhanced learning in its open and hybrid system of academic provision. Students benefit from the flexibility of its system to combine work and study. They enroll from remote geographic areas and are able to select tutorial times that can be combined into one or two days of attendance per

week.

The university utilizes technology in the management of learning and offers access to academic, administrative and student services through its Learning Management System (LMS). The Learning Management System (LMS) provides course management facilities to all students at AOU. Course calendar, events, tutorial outline, submission dates and means of uploading assignments and downloading information are available for users. The system also facilitates contact with student help desk that is synchronous or asynchronous and offers a range of services and models of contact. The university also offers tutorial support forums where students can access the displayed information, post comments, and contact their tutor or group.

The case study follows the work of forty three senior students in the English Language and Literature Programme at the Arab Open University Lebanon. The participants were involved in field work in the second semester of their final year, following theoretical instruction in tutorials and face to face contact in previous semesters. The group was utilizing technology enhanced learning in the form of dialogic models of conferencing, on weekly basis. Virtual forums were set, accessible to the group members and monitored by the tutor, to facilitate the exchange of ideas among group members.

Participants working on the same theme were grouped together. There were eight major themes that served as main frames for the working groups and their sub topics.

Table 1. Participant Groups and Virtual Forums

| | |
|----------------|---|
| Group A | Theme : ESL problems and practices |
| Topics | <ul style="list-style-type: none"> • Learning English through songs in the pre-school • Communicative methodologies in ESL cycle one (6-8yrs) • ESL errors in writing in cycle two Speaking and writing problems in ESL cycle three (12-13yrs) • Comparative study of grammar competence in English of Senior students at two Lebanese Universities |
| Group B | Theme : English for students with special needs |
| Topics | <ul style="list-style-type: none"> • Sociolinguistic perspective on learning difficulties: a case study of a five year old • Language problems of a dyslexic learner • Language teaching and autistic learners: a case study • Problems that face students with special learning needs • Difficulties in writing English in deaf and blind learners in cycle two: a case study |
| Group C | Theme : Language in advertisement |
| Topics | <ul style="list-style-type: none"> • Selling vanity products • Language use in telemarketing • Buying the "Manager's Choice" • Buying death : cigarette advertisement |
| Group D | Theme : Language in political rhetoric |
| Topics | <ul style="list-style-type: none"> • Comparative analysis of Obama and Luther King's speeches: the Black experience • Authenticating realities: selling ideology (Lebanese elections) • Comparative analysis of Gondolissa Rice and Magaret Thatcher's rhetoric: gender in stateman's talk • Political Slogans: opting for a date in March (Lebanese Elections) |
| Group E | Theme : Language and identity |
| Topics | <ul style="list-style-type: none"> • Ethnocentrism in Pocahontas: Systemic Functional Perspective • Presenting the self in chat rooms • Identity issues in youth conversations: a case study at Verdun Dunes (Beirut City Centre) |
| Group F | Theme : Phatic communion |

| | |
|----------------|---|
| Topics | <ul style="list-style-type: none"> • Ladies' talk in a beauty saloon • Gender characteristics of ladies' talk in a gym |
| Group G | Theme : ESL teaching methods |
| Topics | <ul style="list-style-type: none"> • Getting things done in ESL cycle one : teacher's talk • Strategies of using language in class instruction • Touching people's lives in a positive way: ethnographic applications in the classroom |
| Group H | Theme : Language and business |
| Topics | <ul style="list-style-type: none"> • Business English: The role of modal forms in economic forecast • A case study of governor Riad Salameh's speech (Central Bank of Lebanon) |

(Al-Khatib, 2009)

Methodology

The participants in the case study were distributed according to the set themes incorporating the research topics of their choice. The virtual forums provided conferencing facility for each group members.

The students were monitored for frequency of access, quality of contribution and additional activities. Frequent exchanges took place, folders were constructed for every group, resource sites and links were created, relevant frameworks and useful exchanges were displayed by each group.

Table 2. Sample data

| |
|--|
| <p>Sample display 1</p> <div style="background-color: #e0e0e0; padding: 5px;">You are here</div> <p>AOULMS</p> <ul style="list-style-type: none"> / ► VF-1 / ► Forums / ► Language and Advertisement Discussion Forum / ► Categorize your data and identify emerging patterns <p>Collecting and categorizing data by 001072</p> <p>Monday, 29 March 2009, 02:17 PM</p>  <p>My aim is to highlight the hidden message in the ads and to show how advertisements convince the consumers with the products tapping into shared cultural ideology on beauty essentials.</p> <p style="text-align: right;">Edit Delete Reply</p> <p>Reply 1</p> <p>Monday, 29 March 2009, 06:32 PM</p>  <p>It may be a good idea to check Fairclough's critical discourse analysis framework as ur topic may require assessment of how the wider social context may influence the language exchanged</p> <p>Reply 2</p> <p>Monday, 29 March 2009, 09:25 PM</p>  <p>Fairclough looks at representation of ideology and world relations in the immediate social context as well as the wider cultural milieu. Check CDA framework. I think it will help</p> <p style="text-align: right;">Edit Delete Reply</p> |
|--|

Sample Display 2

You are here**AOULMS**/ ► **VF-1**/ ► **Forums**/ ► **ESL Problems and Practices Discussion Forum**/ ► **Scrambled ideas on Methodology****Collecting and categorizing data by 005725**

Tuesday, 30 March 2009, 04:21 PM



My research is about English errors that French educated students make in writing. My data will be 10 texts written by French educated students. I will identify their errors and group them according to their types. For example: morphological mistakes; singular/plural mistakes; word order mistakes; ... Any suggestion?

[Edit](#) | [Delete](#) | [Reply](#)

Reply 1

Wednesday, 31 March 2009, 07:40 PM



There will be data that can be directly categorized as belonging to one area or another, and there may be data that would fall in grey area. I suggest you apply categories of **grammar mistakes** and **other mistakes**, then go on to test the theories on the data

[Edit](#) | [Delete](#) | [Reply](#)

Reply 2

Wednesday, 31 March 2009, 09:13 PM



I agree! You may arrive at other indicators that can be food for thought for further research!

Discussion

Performance indicators were collected from University Management System (UMS) that related to the participants' summative grades and final assessment exams of the first and second semesters, that is before and after using technology enhanced learning through virtual forums related to their project work.

Data from UMS comprised statistics on semestrial assessment that relate to first semester final exam grades and second semester final exam grades. Statistics on performance were compared to chart the progress of the students and identify levels before and after being involved in TEL project work.

Focusing on final exam grades rather than continuous assessment of assignment work is perceived to serve research interests of identifying progress in academic performance in controlled context. Continuous assessment comprising set assignments contributed to percentage in final course grade, without being targeted separately in the quantified data, as these are not controlled in the same manner as the exams. Variables related to course level of difficulty and year of progress in university study, as well as completion of prerequisite courses and material, were controlled to arrive at valid indicators.

Findings

The monitoring of forum groups established the participants' increased motivation, evident on the basis of number and quality of their postings. Comparative records on access and participation in the case study indicate at least four folds increase to the assigned forum at any one interval (Al-Khatib, 2009). In addition to the required work, independent attempts were made at the learner's initiative, indicating personal motivation for active learning.

As participants engaged in reviewing peer work and commenting on each other's suggestion and display, qualitative assessment of in class presentations indicated an overwhelming improvement in the performance of the group at all tiers.

Quantitative evidence

1. Increased number of access and posting (weekly average)

General forums

| Forum | Description | Discussions | Subscribed |
|--|--|-------------|---------------------------------------|
| New update from Research Support Group at The University of London | Discussion joining us from Research Support Group at the University of London Goldsmiths College on Learners and Second Language The Centre for Language Culture and Learning invites you to a talk by Dr. Clare Kelly, Head of BA Education, Culture and Learning Department of Educational Studies, ... | 3 | Yes |
| ESL Discussion Forum | ESL Discussion Forum | 12 | <input type="text" value="1"/> Yes |
| Language and Advertisement Discussion Forum | Language and Advertisement Discussion Forum | 11 | <input type="text" value="1"/> Yes |
| Critical Linguistic Approaches Discussion Forum | Critical Linguistic Approaches Discussion Forum | 10 | <input type="text" value="1"/> Yes |
| Language and Power Discussion Forum | Language and Power Discussion Forum | 17 | <input type="text" value="1"/> Yes |
| Language and text analysis Discussion Forum | Language and text analysis Discussion Forum | 10 | <input type="text" value="1"/> Yes |

 Moodle Docs for this page

2. Integrating knowledge and learning in active involvement (accumulating and categorizing information in group forum repository)

Language and Power Discussion Forum

| Discussion | Started by |
|--|---|
| categorization of data |  Rana F. Demashk 090023 |
| Aims of investigation |  Soraya A. Yehya 080637 |
| The importance of English language in hotel management |  Stephanie S. Sleiman 081413 |
| some previous ideas about translation |  Manal H. Ahmad 008261 |

| Discussion | Started by |
|---|---|
| literature review |  Rana F. Demashk 090023 |
| data collection |  Rana F. Demashk 090023 |
| speech acts |  Rana F. Demashk 090023 |
| data collection |  Manal H. Ahmad 008261 |
| research review |  Manal H. Ahmad 008261 |
| Literature Review |  Soraya A. Yehya 080637 |
| Data Collection |  Soraya A. Yehya 080637 |
| Categorize your data and identify emerging patterns |  Dr. Hayat Al-Khatib |

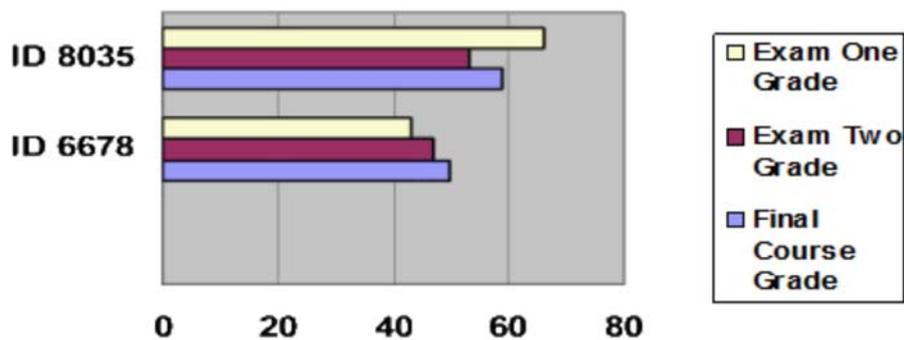
Critical Linguistic Approaches Discussion Forum

| | |
|---|--|
| data categorization |  Annie P. Haddad 008533 |
| methodology |  Annie P. Haddad 008533 |
| Intonation in Martin Luther king speech |  Mohammad A. Shatila 007701 |
| cohesion patterns in the writings of grade seven students |  Nidal M. Kawssan 008824 |
| The literature review |  Sara Y. Abou-Kobeh 008480 |
| Gendered language in Avatar |  Sara Y. Abou-Kobeh 008480 |
| data collection |  Annie P. Haddad 008533 |

| | | |
|---|---|---------------------------|
| grammar analysis of Dulce et Decorum est |  | Tamara S. Al-Rifai 008401 |
| Categorize your data and identify emerging patterns |  | Dr. Hayat Al-Khatib |

3. Performance indicators in pre and post testing (first and second semesters)

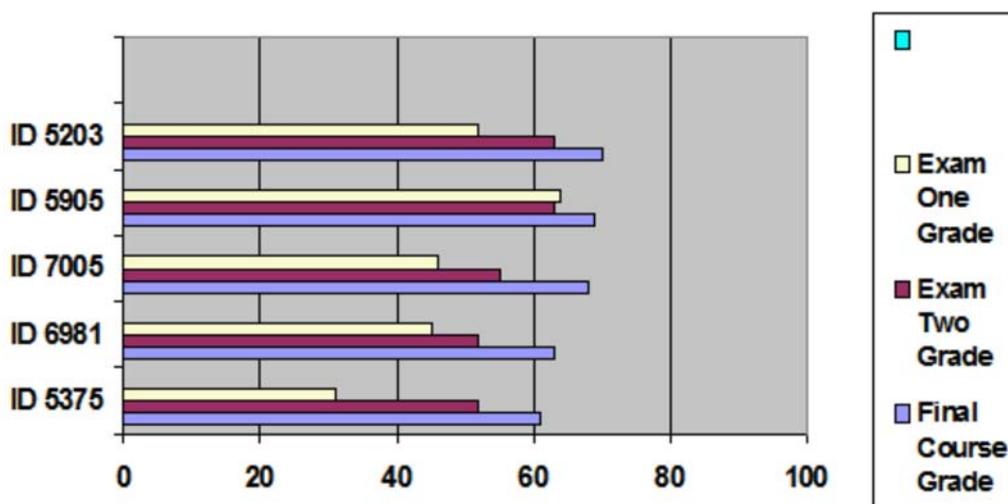
Figure 1. Cumulative Course Grade at D Tier (total 2)



In one case Final Exam Two grade is greater than Final Exam One grade.

In one case Final Exam Two grade is less than Final Exam One grade.

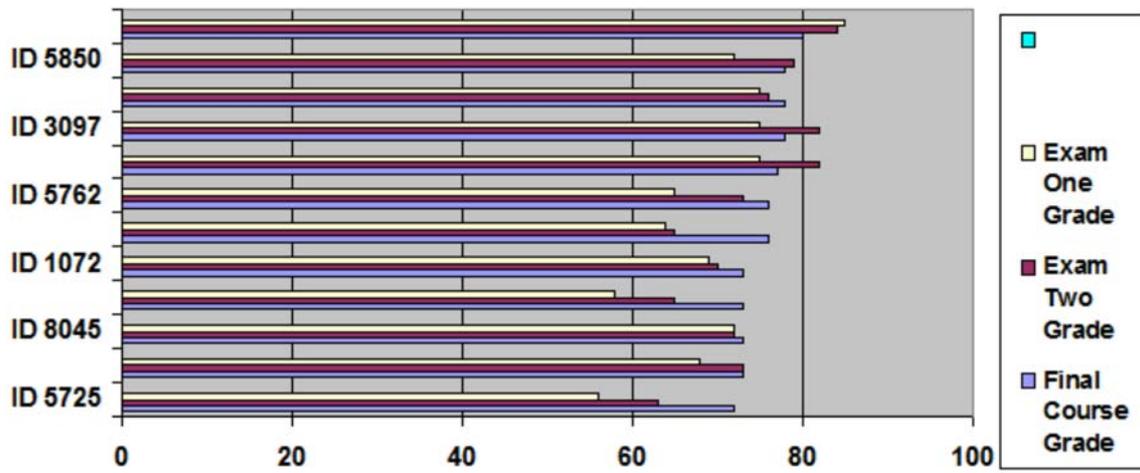
Figure 2. Cumulative Course Grade at C Tier (total 5)



In **four cases** out of five, Final Exam Two grade is greater than Final Exam One grade.

In one case (ID 5905), Final Exam Two grade is less than Final Exam One grade, by 1%.

Figure 3. Cumulative Course Grade at C+ Tier (total 12)

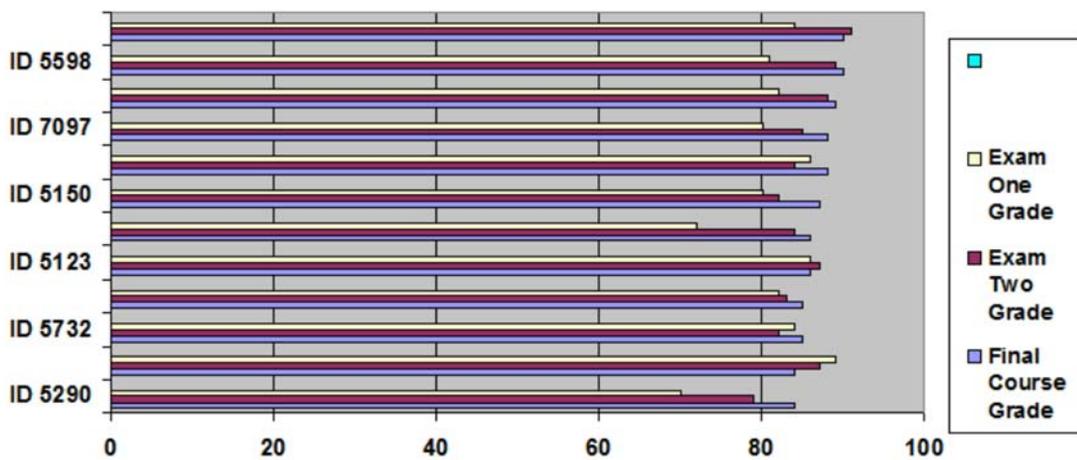


In **ten cases** out of twelve, Final Exam Two grade is greater than Final Exam One grade.

In one case (ID 8045), Final Exam Two grade is equal to Final Exam One grade.

In one case (ID 5596), Final Exam Two grade is less than Final Exam One grade, by 1%.

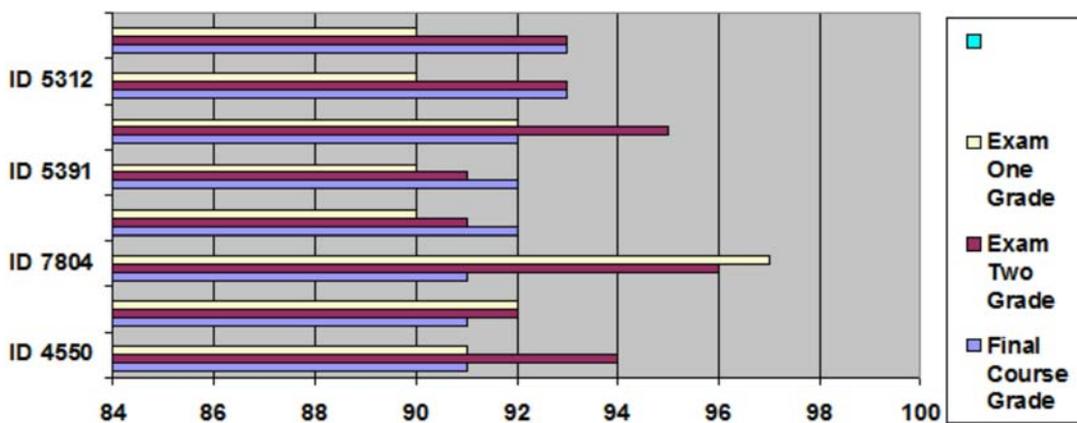
Figure 4. Cumulative Course Grade at B Tier



In **nine cases** out of twelve, Final Exam Two grade is greater than Final Exam One grade.

In three cases (ID 7130, ID 5732, ID 5329), Final Exam Two grade is less than Final Exam One grade by 2%.

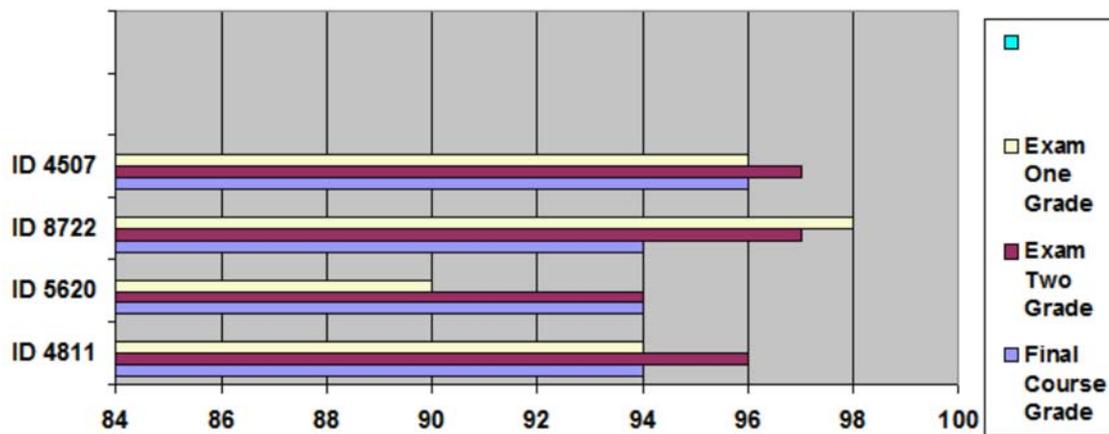
Figure 5. Cumulative Course Grade at B+ Tier (total 8)



In **five cases** out of eight, Final Exam Two grade is greater than Final Exam One grade.

In two cases (ID 7317, ID 4661), Final Exam Two grade is equal to less Final Exam One grade.

In one case (ID 7804), Final Exam Two grade is less than Final Exam One grade by 1%.

Figure 6. Cumulative Course Grade at A Tier (total 4)

In **three cases** out of four, Final Exam Two grade is greater than Final Exam One grade.

In one case (ID 8722), Final Exam Two grade is less than Final Exam One grade by 1%.

Qualitative evidence

Qualitative follow up on class performance identified the following abilities:

- Increased technical ability and improved skills within a relatively short period to use ICT supported education tools and interactive media.
- Gradual departure from reliance on tutor instruction to new found confidence in experimenting and initiating
- Assuming a new learner role and model in the learning process.
- Moving to clusters of collaborative learning
- Sharing and exchanging resources in controlled educational context, facilitated by peer-to-peer learning infrastructure.
- Developing additional knowledge in course material and research methods through reflective dialogue and interaction.
- Increased dialogic ability to develop multimodal perspectives in discussing a specific topic.
- Developing content management systems and learning management systems.
- Integrating knowledge and learning in active involvement
- Utilizing innovative technology enhanced learning scenarios in uploading and exchanging information.
- Using personalized content in specific user and group profiles in virtual forums.
- Taking part in interactive experiences in the context of online and virtual forums.
- Accumulating and categorizing information assets in group forum repository.
- Acknowledging usefulness of TEL in providing rich channels of communication independent of time, place and pace
- Accepting collaborative learning as well as blended learning as important facets of education in the 21st century
- Building trust within the group members.

In addition to the above, specific cognitive, analytic and synthetic advantages were identified that relate to developing skills in dealing with feedback and themes, personalized discovery of potential and ability, developing reflective strategies in dealing with new learning profiles and group styles, increased competence profile, developing methods of selecting and responding to individualized and group exchanges, and integrating and processing relevant information.

Technical advantages were also observed in new found ability to deal with multi-modal interface.

Pedagogic advantages were identified that relate to learners' ability to embrace new roles in charting

their path of learning and in actively engaging with learning process, reformed attitude in acknowledging responsibility of conducting field work and the associated authenticity requirements of conducting research and case study.

Sociocultural advantages and sensitivity to user interaction, learner self reflection and peer response, as well as ability to identify and collaborate with the developing profile of the learners.

General academic advantages related to the ability to track and interact with the other learner's activity, interaction with the learning material and ability to identify emerging needs and interests, as well as ability to evaluate and assume different learning styles

Conclusion

The research sought to determine the direct impact of Technology Enhanced Learning (TEL) through follow up on a case study in an open education context. The aim was to conduct empirical research to explore evidence that would further our understanding of actual use scenarios and the outcome for the users in relation to concerns raised that equate digital learning experiences with conventional approaches, and negative claims reducing the process to mere substitution of traditional learning tools with technical ones, with no profound explicit impact (Neijdl, 2002; Simon and Quemada, 2002).

The end goal is to support the learner-centred experience in the learning process. Establishing the educational benefit in the case of participants in this case study confirms the positive effect of technology driven initiatives, based on identified pedagogic concepts.

The cultural environment is a factor that would merit future research as we move deeper into the digital era. Technical infrastructure and pedagogic innovation are gaining momentum as the research attempts to look at all the facets associated with technology enhanced learning.

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