



Education Strategy

including workplan with Key Performance Indicators

" learning led, not technology driven"

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Executive Summary

This strategy charts the future role and direction for the JEI taking into account the various drivers coming from:- The Jordanian National Education Strategy; Education Reform for the Knowledge Economy (ERfKE II); the Non-Formal Education in Jordan sector; the findings from the Impact Assessment Report from The Education Development Center ; and the JEI Business Plan

Amongst all the various drivers a number of important common themes are evident which, together, provide a clear sense of direction as the JEI consolidates and moves into its next phase of development. The themes may be summarised as follows:-

- *Learning opportunities and skills development*
- *Community*
- *Innovation*
- *Monitoring and Evaluation*
- *Capacity Building*

To address these common themes the JEI has devised a strategy which aims to work with schools to bring about change through improving the learning opportunities and the skills development and by involving the local community. This four part intervention follows the steps as follows:-

- Infrastructure and skills audit – *initiating*
- e-Curricula and pedagogic training - *establishing*
- Change management - *embedding*
- After school activities programme - *developing*

The JEI will continue its role as a test-bed for research and innovation, and these test-bed projects will be undertaken in the context of piloting within the four part intervention model with detailed analytical monitoring and evaluation based upon objective outcomes and real changes in learners' achievements and in teachers' professional practice.

The interventions will be undertaken with the assistance of local or international partners, but the management and co-ordination of the projects will be undertaken by the JEI.

It is anticipated that as the programmes continue to evolve in Jordan that a pool of suitably qualified teaching colleagues will develop who have been through the intervention strategy and are familiar with the programmes. These individuals will become associates of the JEI and be invited to take part in roll-out of future programmes on the basis of periodic secondments.

The JEI has already established working relationships with international universities, such as Harvard, via TFU and universities in the Netherlands via CADER; discussions are currently taking place UK universities in London and Bath in connection with professional development programmes. Through the consolidation of these relationships and these programmes, the capacity and the experience of the JEI will increase and the resources available to it will continue to grow.

With a growing pool of JEI associates, the JEI is well placed to undertake consultancy related to ICT in education, implementation and change management on a regional and international basis.

Introduction

At its establishment as an independent NGO in January the summary of the JEI's mission was reinforced and re-stated as follows:-

"Accelerate education reform through a public private partnership model which drives innovation and capability"

From its original conception and through its recent development, three operational tracks have been defined – Discovery schools, Lifelong Learning and ICT Industry Development. The public private partnership model (PPP) has been prominent in all these tracks.

The ICT industry track is something which the JEI has directly influenced since its inception. The successful growth and development of several new ICT companies, many of which are JEI partners, is testimony to the positive business environment for education ICT which has been created in Jordan. Highly successful companies such as CADER, Intaj, ITG, JAID, Menhaj and Rubicon have been founded and continue to grow in this positive environment and many are now thriving in an international arena.

The mutually supportive relationships with these important local, national and international companies – in the form of local PPPs - provide the basis for the sustenance growth and development of the JEI as it explores new markets.

Lifelong Learning (LLL) is a Chimera which many development projects try to capture. LLL can take many forms, but at its root, it is about the development of learning skills which will serve citizens' economic needs for sustaining their lives in a rapidly changing global economy. A sub-set of LLL is often taken as the need for adult learners to improve their computer literacy and employability skills.

Insofar as the JEI has impacted upon the flexible learning and thinking skills of the members of the learning communities in the Discovery Schools there have been some noteworthy achievements on the LLL track. However, at present there has been little impact by the project upon adult learners from the communities surrounding the targeted schools.

The JEI has, over the past year, been engaged in making the transition to becoming an independent NGO from its earlier incarnation under the wing of Ministries of Education (MoE) and of Information Technology (MoICT) . The purpose of this document is to establish the education strategy for the JEI as it moves into its next stage of existence.

The strategy charts the future role and direction for the JEI taking into account the various drivers coming from:- The Jordanian National Education Strategy; Education Reform for the Knowledge Economy (ERfKE II); the Non-Formal Education in Jordan sector; the findings from the EDC Impact Assessment Report¹ ; and the JEI Business Plan²

A summary of all these drivers is included at Appendix 1.

¹ Light, D, Rockman, C., et al (Apr 2008) *Evaluation of the Jordan Education Initiative – Impact Assessment Report*
Washington DC: Education Development Center

² JEI Business Plan Y-Consult June 2007

Common Themes for Future Direction

Amongst all the various drivers a number of important common themes are evident which, together, provide a clear sense of direction as the JEI consolidates and moves into its next phase of development. The themes may be summarised as follows:-

- *Learning opportunities and skills development*
- *Community*
- *Innovation*
- *Monitoring and Evaluation*
- *Capacity Building*

Learning opportunities and skills development

Through the JEI's involvement in the careful and thoughtful application of ICT, in its widest sense, learning opportunities will be enhanced. Teachers and students alike need to be able to use the ICT as more than just a vehicle for basic Office applications and e-Content delivery these users must develop higher level information literacy skills in order to maximise the use of the technology.

Community

The closer involvement of the wider community in education is one of the features of 21st Century learning. The JEI can work with schools and their wider stakeholder groups to gain maximum benefit from the investment in schools' infrastructure. The JEI can help to model after school programmes and holiday clubs to involve the community more in the life of the school and to provide informal and intergenerational learning opportunities for those families who do not have access to technology and learning resources in their homes.

Innovation

Across the globe new approaches to learning and teaching are emerging continually. Educators are united in the view that the application of technology should be learner led, not technology driven. Continuing its established role as a test-bed for innovation, the JEI will strengthen its links with technology, education and training partners to pilot new learning ideas and solutions.

Monitoring and evaluation

All investments in education – technology, infrastructure, training, - should be monitored to assess their impact on education outcomes; these impact measures should include, but not be limited to short-term education attainment in national performance measures. The JEI through its established M&E methodologies will use a range of performance indicators to assess the impact of investments and initiatives.

Capacity Building

The JEI is a small organisation with strictly limited resources, but through its track record and continuing relationships with major national and international players, it is well placed to be an agent for change. The various partners, private companies, universities and government agencies must play their part in providing support and personnel in order to fulfil the change agenda.

The Current Situation

JEI Activities

Since the beginning of the initiative, the core JEI team has been deeply engaged in the piloting and testing of e curricula in 6 subject areas – EFL, maths, ICT, Arabic, science, and civics and in implementing and monitoring subject specific training, and in overseeing professional development, and change programmes in a small number of Discovery Schools.

In addition to the JEI core team, in the field, a number of interns provide support to schools in using ICT for education. The interns also provide an indispensable information-gathering resource for site surveys; they collect information about the technical status of schools and their e-Readiness. They give invaluable support for teachers on the ground and provide the data for quarterly reporting to the MoE on the real state of play of ICT in schools, in terms of the technical status, computer lab occupancy and the teachers' utilisation of e-Learning resources

These ongoing commitments are of crucial importance to the national education agenda in Jordan, but they are rather resource-hungry and present something of a brake on the JEI's growth and development into emerging areas of importance. The most significant of these being whole school e-Learning implementation and the associated change management programmes.

As well as these core activities, the JEI is also currently involved in several other projects which are either live, being evaluated or are in the pipeline. The JEI is frequently invited, by international corporations and donors, to participate in e-learning initiatives and projects. The table (Appendix 2) indicates the existing or putative assignments. Whilst there is a clear joining thread, and a commonality of purpose across all these projects, the small team at the JEI is unable fully to support and evaluate all of these activities in all their complexities.

The need to respond to the many invitations to participate in different schemes and initiatives puts a strain on the JEI's capacity to support education reform and assess the effectiveness of different components. There are many technical issues, such as oversight of the installation of interactive whiteboards (IWB), which are extremely time-consuming and distract JEI team members from achieving full operational effectiveness.

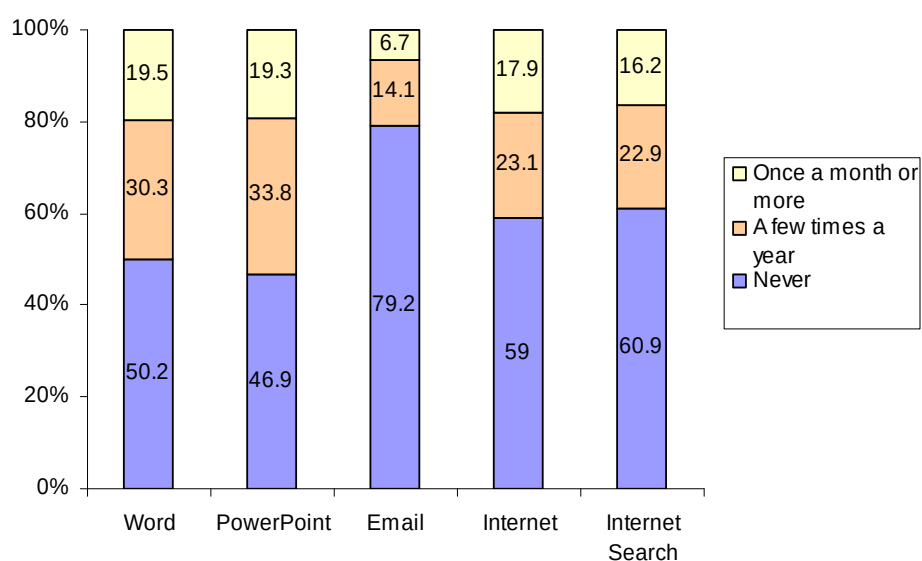
Education transformation on the basis of teacher professional development makes up a joining thread which links the JEI's activities. Nonetheless, this training and professional development work has yet to be fully developed if the technology is to have a significant impact on the lives of learners. The finding in the recent EDS impact assessment that teachers are using the internet so little for their work indicates that few teachers have been able, or have been sufficiently empowered, to make this professional journey into a place, which many see as uncharted territory with many potential pitfalls.

Teacher current use of ICT

The recent Impact Assessment Report ³ reported that in Discovery Schools over 60% of teachers never use internet searching, and almost 80% never use email with their students (Figure 1). These two elements are key indicators which serve to represent the limited extent of the embedding of ICT into a whole-school blended e-Learning solution, they also represent key skills for the development of the knowledge economy which both learners and teachers should be routinely using in their work.

Figure 1

Teachers who report using software with their students



Data Source: Teacher Survey. N=476

Computer Lab Utilisation

As part of their regular field surveys, the JEI interns collate information on the utilisation of the Computer labs. The findings of the site surveys conducted over the last three quarters are as follows:-

Survey Period	Lab Utilisation ⁴
Q2 - 2007	57%
Q3 – 2007	51%
Q1- 2008	57%

The fact that the specialist labs are only occupied for a little over half the available curriculum time represents a substantially poor return on investment.

³ Light, D, Rockman, C., et al (Apr 2008) *Evaluation of the Jordan Education Initiative – Impact Assessment Report* . Washington DC: Education Development Center

⁴ Proportion of teaching periods when the lab was in use compared with total lab. Periods available. Source JEI Site Surveys 12, 13 & 14.

Taken together the evidence from these two independent studies – one on teachers' own reported practice, the other on resource utilisation - are a significant negative reflection upon the level of ICT integration into normal working practices.

However, from an international perspective, it is not an unusual finding. When scarce ICT resources are concentrated in a very small number of ICT suites, or computer labs and teachers themselves have low levels of confidence with the technology and few imperatives to use it on a regular basis. The situation is reinforced when the programmes for the professional development of teachers do not have sufficiently general professional development focus about how the organisation of learning has a central role in promoting information literacy across the curriculum.

These findings serve to underline the central importance of JET's role evolving into a technology implementation agent. The role needs to encompass teachers' training and their continuous professional development (CPD) in helping them to understand how technology can assist in their professional practice. The role also includes the development of the necessary monitoring and evaluation mechanisms which will enable the impact of ICT using a wide range of key performance indicators.

Policy makers often believe that providing schools with technology will automatically be a panacea for raising standards and improving education outcomes, but this is seldom the case. Investment in education technology is expensive and if this investment is not accompanied by appropriate training and professional development it can easily be wasted, with the machines reaching the end of their useful life before they have been fully utilised.

These findings reinforce the need for parallel and integrated programmes of change management and e-Learning professional development to accompany the spending on technology infrastructure.

The Education Strategy

As the JEI moves forward into its next phase of development, there will be three key elements to the implementation strategy.

1. *As a testbed for innovation research and development.* The major multi national ICT corporations, such as Microsoft, Intel, HP, Oracle and Cisco, are confident to work with the JEI since they know that any technology initiative which they wish to promote will be effectively implemented in Jordan with thorough and detailed planning, supervised deployment and effective monitoring and evaluation;
2. *As an education change agent;* to facilitate technology roll-out, implementation of teachers' training and professional development, embedding reforms and promoting the lifelong learning agenda through improving learning skills and access to technology;
3. *As a regional consultancy resource for technology implementation and education reform;* having built its local reputation and capacity in Jordan, and with its strong links with international universities, the JEI is in a strong position to make a major contribution to education reform in those developing countries undertaking education reform in the Arabic speaking world and beyond.

1. JEI as a testbed for innovation research and development

The confidence which international partners have in the JEI means that it will continue to be invited by them to take part in pilot programmes for new technologies and innovations. These research programmes will need to become fully-costed operations, since the international partners gain significant benefit from their work with the JEI. The partners can be assured that the technology will be implemented in a carefully designed pilot programme, the operation will be continuously monitored and the effectiveness will be measured using the JEI's internal monitoring & evaluation procedures.

Alongside these commissions from international partners, there are also a number of research and development projects which the JEI needs itself to explore in order to ensure that the roll out of new technology on a national scale is affordable and sustainable, two examples of which are:-

Software

The standard software applications installed upon school PCs are primarily Microsoft Office applications. The machines have the capacity to be used for much more than simply as office productivity devices and for Internet browsing and e-Content delivery. There are many creative graphics programs, scientific and maths applications which would enable effective use of the machines off-line if necessary. For schools to acquire proprietary software to run, for example, graphics applications would be prohibitively expensive, but there are many free and open source education software titles which can be freely downloaded and installed on PCs. (A sample list of some of these titles is included at Appendix 6). After thorough evaluation and trialling with local technology partners such as the Queen Rania Centre for

Technology, the JEI is well placed to oversee pilot implementations of agreed open source software titles.

Internet and complementary technologies

Some private schools are currently implementing a technology which enables SMS messages to be sent to mobile telephones directly from the school's own Internet-enabled management information system. The system enables the school to send message to parents regarding school events, or in relation to unexplained student absences and can even alert students to submit assignments when the deadline is approaching. Through its involvement in school upgrades and rehabilitation programmes it is hoped that the JEI will be able to pilot these sorts of technology innovations in government schools.

2. JEI as a change agent to facilitate technology roll-out, implementation and to embed reforms

The JEI has developed a great deal of experience and expertise in working with schools and developing programmes to bring about improvement and change. The programmes have encompassed both the provision and implementation of technology solutions and changes in teachers' perceptions and expectations and the reform of professional practice. The transformation of the learning experience to promote a 21st Century approach has, in the most successful examples, involved the remodelling of schools in respect of the distribution of ICT hardware and a change to more student-centred learning.

Taken together, in those schools where there has been a successful JEI intervention, the programmes have led to a raising of standards and an improvement in the quality of education outcomes.

The JEI has undertaken the implementation of many pilot programmes with both public and commercial partners in recent years. Through the evaluation of these initiatives a model has emerged which, when fully implemented, provides the basis for lasting reform and with a high impact on learning outcomes.

The programme, which has been developed, parts of which have been piloted in field trials in the Discovery Schools other parts have yet to be fully implemented, consists of a **four part implementation strategy**. The strategy reflects the overall policy aims of *initiating, establishing, embedding, developing*. This model has been developed to maximise the benefit which is derived from the investment in hardware. It incorporates key inputs in training, change management and strategies for maximising the return on investment for equipment as well as ensuring that the technology roll-out is orderly and effective. The four components, in detail, are as follows:-

- Infrastructure and skills audit – *initiating*
- e-Curricula and pedagogic training - *establishing*
- Change management - *embedding*
- After school activities programme - *developing*

It is in the formulation, the implementation and the interplay between these four elements together that brings about the changes in working practices which lead to sustainable improvements.

These four elements including technology roll-out, change and transformation can be implemented by the JEI on the basis of a detailed needs analysis. For schools and learning communities which are at the beginning of their journey into the application of educational technology this will be a four step sequential process, for those at more mature stage, the intervention may be less intensive, focusing, for example, on the enhancement the e-Learning capabilities and seeking ways of incorporating these into a blended learning solution by selecting and applying single elements from the sequence.

Initiating

The initiation phase requires a thorough needs analysis both in terms of auditing and assessing teachers' skills as well as undertaking a technical audit. The teachers' skills are much wider and more varied than can be addressed by a simply subject-specific training. The skills need to include an assessment and a resultant action plan which addressed:-

Teachers' approach to the use of technology for learning	their use of digital resources for lesson planning; their understanding of the value of using technology; their understanding of learners' digital and learning skills;
Teachers use of communication and collaboration	their knowledge of internet safety skills; the use of email and on-line communities of practice; their understanding of e-publishing and the application of social networking in education
Resources for learning	teachers' skills using hardware & software; teachers' internet searching skills; teachers' capacity in creating electronic resources eg. PowerPoint presentations and/ or websites
Management and recording	Management of student assessments electronically; using an electronic schools management information system; learner portfolio management.

A summary of the skills is shown at Appendix 3).

Establishing

If the education reform for the knowledge economy is to succeed, it needs different approaches to learning and teaching. Advances in education technology mean that these new approaches are more available to teachers than at any time previously; at teachers disposal are not only lively and interactive e-Learning resources to enhance subject specific curriculum delivery, but they also have access to email, on-line collaborative tools and storage space. Underpinning all these opportunities is the Internet and the World Wide Web with more scope for information seeking and retrieval than was imaginable in previous generations of learners.

To establish ICT utilisation as a regular part of the learning programme both teachers and learners need to have a good understanding of the electronic learning

environment in general and a knowledge of the specific e-Curricula resources which are available through the National Learning Portal.

To bring about the changes in professional practice implicit in the application of the range of skills outlined above requires a planned programme of change management. The change management programme must encompass all stakeholders from the level of education directorates through school supervisors and school principals right down to the classroom teachers. The central purpose of the change is to seek to transform classrooms into more open learning environments.

Students need to be provided with the skills to be able to operate in the electronic environment productively and teachers must be given the skills, knowledge and understanding of the medium to be able to successfully guide and facilitate the students' learning. This does not signal the end of the teacher's role as the expert and knowledgeable leader of learning, there will always be a place for experts and inspirational subject specialists. Rather, it means that the role is extended to develop as one who guides and facilitates the students' active learning.

Embedding

To embed technology and the attendant more student-centred approaches to learning and teaching requires a shift in emphasis which requires each establishment to think deeply about their aims and objectives and to make changes in their professional practices accordingly.

The use of ICT provides an invaluable adjunct to learning; it forms an important plank in the overarching student experience – based upon creativity, investigation and communication. Learners need to be taught to develop independent learning skills so as to be in control of, rather than slaves to, the technology. The development of self-knowledge, confidence and enquiry will be stimulated and embedded through the interactions which students have with their guides and mentors as well as with their peers. The National Learning Platform (a virtual learning environment) will be the means by which much of the learning is mediated. Students have their own personal storage space on the learning platform and they will be able to gain access to their records, resources and e-Portfolios from any place where they have internet access – school, home, internet café. Additionally the students can be guided to create their own online communities which will enable collaboration, group work and project-based learning to take place in the electronic opportunity space as well as face-to-face in traditional ways.

They need to develop study skills and competence in information literacy in order to use productively the enormous array of electronic resources which are available to them through the World Wide Web. These skills are summarised in the chart at Appendix 4).

Developing

The very basis of applying an electronic curriculum and a more open approach to learning is that the learning process is not bounded by regular timetables and the four walls of a custodial classroom. Learning can be anywhere and anytime – all the resources are readily available on the Internet, at a local cybercafé, at home, or during out of school activities. It is through this development phase that the objectives of Lifelong Learning will be established, not just for members of the school

population but for people from the wider community of parents, families and the local business community.

The professional development programmes for teachers need give them the skills and confidence to develop a wider repertoire of strategies for embedding learning and developing students' capacity as self-directing learners. Such important knowledge economy skills as Critical Thinking, Planning and Managing Time, Adaptability and Teamwork will only be developed through adopting approaches which are different from traditional classroom settings.

Teachers' organisation of learning needs to provide the space and the opportunity for students to work independently, to spend time, for example, in a learning resources centre doing their own work outside a teacher's immediate control. Principals and school supervisors must be part of this process, so as to encourage these innovative practices and to monitor the students' development of a wider range of independent study skills and personal organisation capacity.

Project work

Students need to have the opportunities to apply knowledge in ways which emphasise the interrelationship between subject disciplines and which require them to think for themselves and to solve problems. They must be able to apply their knowledge and be effective in the management of their time through careful planning

Group work

Students must have opportunities to work together in small teams, to share and negotiate, to assume positions of leadership and responsibility as required and to understand the value of successful outcomes which are the product of the collective contributions of the whole group.

The learning resources must be more readily available, and this will require computer labs and learning resources centres to operate more flexibly, with more scope for open access for groups of students to spend some parts of many lessons using these facilities.

A sample action plan for the 4 part school transformation methodology is included at Appendix 5)

The JEI's role in the more general application of this framework would be to formulate and assist in the development of the training materials necessary to track implementation and monitor effectiveness. The recipients for the professional development and the monitoring & evaluation training would include principals and school supervisors. These strategic education leaders should play a key role since, as part of their regular monitoring role, they can assess and monitor the application of the transformation process. It is only through the involvement of this wider education hierarchy that it will be possible to produce a replicable model for national roll-out.

3. JEI as a regional consultancy resource for technology implementation and education reform

Currently the JEI has been invited to undertake feasibility studies for interventions in education reform and technology roll-out in Kazakhstan, Azerbaijan and Chechnya. Additionally, strong alliances exist with international universities in the US and Europe which will enable the JEI to promote and develop this work on the basis of this shared academic and professional credibility.

Having built its local reputation and capacity in Jordan the JEI is in a strong position to make a major contribution to education reform in these countries. Notwithstanding the current opportunities there are many more examples of education ICT projects and programmes within the North Africa, the Middle East and Gulf regions which would benefit from the 4-part JEI intervention strategy which has been outlined.

Additionally, there are many "invitations to tender" and RFP notices for which the JEI is now considering submitting proposals in association with local and international partners.

Local partnerships in Jordan are now mature and well established so that joint submissions for suitable projects are becoming an attractive proposition. On an international stage there is ample scope for the JEI to form MoU and strategic alliances with universities, major companies and NGOs which are active in this region.

Through taking advantage of these international opportunities the JEI is not only now able to demonstrate its capacity to begin generating income, but it is through these projects that professional development opportunities will increasingly become available for teachers in Jordan who, as JEI Associates, have the skills and the confidence to share their expertise more widely.

Capacity Building

It will take time for the JEI to develop its capacity up to full operational effectiveness and in a sustainable way in all of the areas outlined above. At the present time the JEI operations are being implemented with the assistance of local and international partners, and these relationships will continue to grow and expand as the needs arise.

On another front, it is evident that there have been certain assumptions about the JEI's role in respect of piloting, field testing and trialling of e-Learning resources which have been produced by local electronic publishing companies and organisations. For a commercial organisation, these operations are normal elements in a product life-cycle and the overheads associated with this testing should be expected to be borne as a normal part of the product development costs. Accordingly, it should be reasonable to proceed on the basis that, if the JEI is to be involved in future field trials to tests, it should be paid by the publishers for doing so. This would enable suitable additional personnel, as necessary, to be engaged to undertake and oversee this very labour-intensive operation.

As to the technical and skills audits, the teacher training & continuous professional development, and change management programmes, these are currently being implemented in tandem with local partners. This situation will continue, for the time being, in order for the change programmes to move from the inception to implementation phases. However, over time, a pool of skilful and knowledgeable

practitioners in schools will evolve and grow as part of the Jordan education community and this growing pool of change agents will become one of the country's most valuable resources. Having helped to develop the pool of expertise, the JEI will be in a position to offer these teaching colleagues professional development opportunities on a regional scale by working as JEI Associates on new programmes.

These JEI Associates, who have a deep and practical understanding from the classroom of the ways in which technology can transform learning, will build upon the JEI's core capacity so that the expertise can be exported throughout the region to enhance educational transformation amongst the Arabic-speaking world.

Additionally, it is important that at a district and regional level, those involved with the local management and oversight of schools – such as local education directorates and school supervisors, are completely involved with this process of professional development and change. It is only through the close involvement of education professionals working at all these levels of the educational establishment that a significant impact will be seen in the classroom.

The education reforms implicit in the National Education Strategy and ERfKE proposals require the development of a new sort of learning and teaching experience, and one which is more focussed on the learner rather than the teacher. These reforms will, to a large extent, involve new education technology, but the technology is not the most important element – the reforms should, to reinforce the most important message in this strategy, be learner led, not technology driven.

The JEI, in the future, needs to be much more circumspect in its response to invitations to work with international partners on education technology initiatives. If the JEI is going to maintain its focus as a change agent which can assist in the implementation of the national education reform programme, any such requests need to be placed within the context of the 4-part implementation strategy which is outlined above. The validity of any such future invitation should be judged insofar as it can be contextualised within at least one of the elements of the implementation strategy.

Reflection

The successful programmes with which the JEI has been involved serve to underline the principle that education reform is about people not just technology. The experience demonstrates that any initiative should be learner led, not technology driven.

The table overleaf, taken from a UNESCO publication⁵, summaries the paradigm shift that education reforms throughout the world are seeking to encourage in order to prepare young people for the jobs of tomorrow which the educators of today cannot even imagine will exist.

⁵Newby et al 2000 quoted in UNESCO " Information and Communication Technologies Teacher Education

Changes in Teacher Role	
<i>A shift from:</i>	<i>A shift to:</i>
Knowledge transmitter, primary source of information, content expert, and source of all answers	Learning facilitator, collaborator, coach, mentor, knowledge navigator, and co-learner
Teacher controls and directs all aspects of learning	Teacher gives students more options and responsibilities for their own learning
Changes in Student Role	
<i>A shift from:</i>	<i>A shift to:</i>
Passive recipient of information	Active participant in the learning process
Reproducing knowledge	Producing and sharing knowledge, participating at times as expert
Learning as a solitary activity	Learning collaboratively with others

By transforming education systems to recognise the importance of the development of collaborative and lifelong learning skills as well as knowledge, young people will be given the confidence to compete in an increasingly unpredictable job market.

Summarising the most important features evident in successful ICT projects, an author from the World Links for Development programme has identified Ten Lessons for ICT and Education in the Developing World⁶ as follows:-

1. Computer labs in developing countries take time and money, but they work
2. Technical support cannot be overlooked
3. Non-competitive telecommunications infrastructure, policies, and regulations impede connectivity and sustainability
4. Lose the wires
5. Get the community involved
6. Private-public sector partnerships are Essential
7. Link ICT and education efforts to broader education reforms
8. Training, training, training
9. Technology empowers girls
10. Technology motivates students and energizes classrooms

In almost every respect, the Jordanian ICT in Education development programme, of which the JEI has been a key element, has shown and exemplary application of these ten lessons in almost every respect.

It is no co-incidence, then, that Jordan continues to be the focus of attention of the major international ICT companies, such as Cisco, Intel and Microsoft. Jordan is at

⁶ Robert J. Hawkins World Links for Development Program The World Bank Institute (2004) Ten Lessons for ICT and Education in the Developing World

the centre of a Arabic speaking community which is equivalent in size to the whole of the European Union; it is a politically moderate state with a well educated population and a successful and burgeoning indigenous ICT industry. Added to this, in field of education technology, the foundational investment decisions which have been made – to establish a high-capacity fibre backbone linked to a national data centre at Hashem – mean that all the elements are in place to provide an education system with achievements and outputs to rival the best in the world.

The missing piece in the jigsaw is the implementation of education and curriculum reforms which will feed and nourish the worldwide knowledge economy whilst achieving demonstrable success in international achievement tests..

The placing of this final piece into the jigsaw will be achieved through the successful implementation of the reforms contained within the ERfKE II proposals. The JEI has a key role to play in this implementation through its professional development programmes and by providing a testbed for trialling reforms in the Discovery Schools. In this way it will spearhead the drive to provide training and development programmes which bring about changes in teachers' professional practice and, at the same time it can provide consultancy services throughout the region to spread deepen and embed these reforms.

Next Steps – JEI Workplan

The JEI workplan for the next three years must take account of the commitments from the existing JEI workplan, as summarised in the table below.

CURRENT JEI WORKPLAN 2006 -2009

Ref.	Activities	Time estimate	Start date	Complete date	Line ref from Masterplan
1.	Complete pilot testing of e-modules within Discovery Schools	816 days	02/01/2007	30/12/2009	1
2.	Master Plan Deployment	555 days	02/01/2007	31/12/2008	2
3.	Managing the development and implementation of the e-content	544 days	02/01/2007	16/12/2008	3
4.	Equipping teachers involved in delivering e-content with technical resources	544 days	02/01/2007	16/12/2008	4
5.	Training	550 days	02/01/2007	24/12/2008	5
6.	Manage and Coordinate Deployment workgroup	544 days	17/01/2007	31/12/2008	14
7.	Conduct Site Survey	489 days	18/02/2007	17/11/2008	15
8.	Maintain up status of the Discovery Schools infrastructure	806 days	16/01/2007	30/12/2009	33
9.	Monitoring Connectivity performance	806 days	16/01/2007	30/12/2009	36
10.	Assessing JEI impact on the education system in Jordan	711 days	27/11/2006	30/06/2009	37
11.	Develop a cost effective pedagogic model ready for roll out to all schools	733 days	25/04/2007	31/12/2009	41
12.	Expand Innovations & Research and Deliver Regional Services	633 days	01/02/2006	20/05/2008	47
13.	Introduce change management across all Discovery Schools	347 days	18/04/2007	03/07/2008	58
14.	Enhance the PPP model and support development of ICT sectors and align with their strategy	733 days	25/04/2007	31/12/2009	66
15.	Coordination and alignment with parallel programs	503 days	14/03/2007	31/12/2008	102

In this Education strategy document credit has been given to the successful work of the JEI in working with partners, both locally and regionally, to assist in the roll-out of technology to schools. The JEI's role has been to have a quite detailed involvement in the testing and deployment of e-Learning resources and materials, and to oversee their implementation into the Discovery Schools.

Since the inception of the JEI in 2003 there has been a great deal of development in the understanding of the use of new technology in education. The rise of Web 2.0 innovations, social networking and great improvements in students' connectivity require the education sector to devise better ways in which technology can be used to maximum benefit to raise standards and improve the quality of education outcomes.

To this end, the work of the JEI, in its current and new phase of existence, will be more intimately involved with the professional development of teachers, school leaders, and district supervisors to put learning at the heart of an education system which promotes and harnesses skills and personal qualities relevant to the 21st Century Knowledge Economy.

The JEI is a small yet high effective organisation; in order for it to have maximum impact, and to continue to have the capacity to undertake innovation projects, there are certain activities related to its earlier existence from which it needs to withdraw. The piloting and testing of e-Learning modules and materials is extremely time-consuming and labour intensive and it is proposed that the JEI retains only a broad oversight of these activities. Another significant call upon resources is made by the regular site surveys which the JEI has regularly undertaken into the technical status, in terms of hardware and connectivity, of the Discovery Schools. With the development by the ERfKE Support Programme (ESP) of an on-line, web-based School Technology Readiness Profile, schools will have the responsibility of reporting upon their status directly to the MoE through this mechanism. This new system will take a little time to become fully operational, but it is likely that the Site Survey #15 will be last that the JEI will be required to perform.

The resources which will become available through the withdrawal from these routine activities means that the JEI, moving forward, will be able to dedicate more time in the areas of Innovation, Training, Continuous Professional Development, and Change Management. Additionally it will be able to develop its capacity to undertake improved monitoring and evaluation role and to increase its commercial activities through involvement in advice, consultancy, monitoring, evaluation and inspection, on a regional basis.

Analysis of the existing JEI workplan, which is outlined on Page 18, indicates a personnel requirement of 17.1 full-time equivalent (FTE) members of staff.

The proposed workplan which is outlined overleaf proposes a full time staffing of the similar size – 15 FTE, but a staff which has more educational experience and expertise. This staffing complement will need to be expanded and supplemented as necessary for specific assignments and activities.

Proposed JEI Workplan for 2008 - 2011

Ref.	Activities	Time Estimate	Education Strategy Reference	Start date	Complete date	Full-time equivalent
1.	Complete pilot testing of e-modules within Discovery Schools	80 days	1	01/09/2008	31/12/2011	0.1
2.	Oversee the development and implementation of the e-content	80 days	1	01/09/2008	31/12/2011	0.1
3.	Recommend the equipment necessary for teachers involved in delivering e-content, and monitor the effectiveness	1600 days	1	01/09/2008	31/12/2011	2
4.	Train technicians, teachers, principals and supervisors to take part programme implementation	1600 days	1,2	01/09/2008	31/12/2011	2
5.	Manage and coordinate deployment workgroup	1600 days	1,2,3	01/09/2008	31/12/2011	2
6.	Monitor , evaluate and assess the impact of JEI programmes	1600 days	1, 2	01/09/2008	31/12/2011	2
7.	Develop a cost effective pedagogic model ready for roll out to all schools	800 days	2	01/09/2008	31/12/2011	1
8.	Expand innovations & research and deliver regional services	1600 days	3	01/09/2008	31/12/2011	2
9.	Introduce change management across all designated schools	1200 days	2	01/09/2008	31/12/2011	1.5
10.	Enhance the PPP model and support development of ICT sectors and align with their strategy	880 days	2	01/09/2008	31/12/2011	1.1
11.	Coordinate and align with parallel national programmes	960 days	2	01/09/2008	31/12/2011	1.2

NB. Education Strategy References 1= Research & Innovation (including monitoring & evaluation); 2= Change Management & National Programmes eg. Madrasati; 3= Regional Education Services

Narrative on Workplan

The workplan has been drawn up in the light of the existing workplan (2006-2009) in order to provide for continuity into the next phase of life for the JEI. The programme is prescribed on the basis of a 40 month timescale running from September 2008 to the end of 2011. In order to provide a general overview of the human resources necessary to staff this programme, a full time equivalent figure is provided to equate the number of work days to the personnel requirement.

All the activities are provided with a reference to the part of the Education Strategy which is being addressed – 1) Innovation, 2) Change/Implementation or 3) Regional Services.

Detailed monitoring and evaluation (M&E) should be the hallmark of all JEI activities – assessing the impact of the programmes on educational outcomes; M&E is a natural part of the research and innovation cycle, but it will also be a key component in the quality assurance of the change management and national programmes (such as Madarasati) with which the JEI is involved.

1. Complete pilot testing of e-modules within Discovery Schools (1)

The JEI will continue to have an overseeing role in the roll-out of e-modules in Discovery Schools and in advising on their implementation on a national scale. But this is a very time-consuming process and complete engagement in this process is out-with the role of the resources available to the JEI as it moves forward and undertakes a more important role in helping to realise the Jordan MoE National Education Strategy.

2. Oversee the development and implementation of the e-content (1)

The JEI will have oversight of the development of e-content and the M&E reports from JEI will inform developers of strengths and weaknesses and areas for development, but the JEI will no longer have responsibility for managing the content development.

3. Recommend the equipment necessary for teachers involved in delivering e-content, and monitor its effectiveness (1)

This is a key role for the JEI since a great deal of work needs to be undertaken with teachers in helping them to best utilise the e-learning environment and to blend it with their traditional teaching methodologies. Teachers frequently need laptops and data projectors in order most productively to make use of the e-content; the JEI will continue to make recommendations on distribution and deployment on the basis of the findings from the M&E work.

4. Train technicians, teachers, principals and supervisors to take part programme implementation (1,2)

Training is a very broad umbrella term and it encompasses the training and preparedness of all stakeholders involved in the transformation of professional work practices which are necessary to embrace the ERfKE reforms. JIE personnel will not necessarily undertake all the training themselves, since it will involve not only training

teachers, but also supervisors from local directorates and some technical training of support staff. Nonetheless this component represents the single heaviest investment in personnel of all the JEI activities – it is suggested, taken together, that a full-time equivalent of 4 people are necessary to fulfil the oversight of the training.

5. Manage and coordinate deployment workgroup (1,2,3)

This component is concerned with the administration and management of all the activities of the JEI, in all its three areas of operation; it is something to which a notional 2 FTE posts have been allocated – this roughly equating to the head of the PMO and an administrative assistant.

6. Monitor, evaluate and assess the impact of JEI programmes (1,2)

The M&E element of the JEI operation is central in maintaining its credibility. It is only through assessing the impact of the programmes, in terms of learning outcomes that the JEI will be able to justify its important position within the education reform programmes in Jordan. In order to carry out this role credibly at least one more full time position should be created to provide a the current Head of M&E with the necessary capacity.

7. Develop a cost effective pedagogic model ready for roll out to all schools (2)

Part of the impact assessment element of the M&E work at the JEI must include an evaluation of the cost effectiveness of the new learning programmes in a way which can demonstrate how initiatives can be rolled out on a national basis.

8. Expand innovations & research and deliver regional services (3)

The innovation & research activities – particularly the monitoring of teacher quality are essential elements in education reform programmes which ministries of education across the region have an interest in developing. One strand of innovation & research is the monitoring and evaluation of the quality of teachers' work as part of a more far-reaching school inspection process (In a separate paper there is a proposal as to how this school inspection process may be developed with the JEI taking a leading role).

9. Introduce change management across all designated schools (2)

The management of change is one of the single most difficult aspects of education reform. The JEI has developed a successful track record in a number of Discovery Schools already in managing change. This model is being taken up more widely by a range of schools outside the discovery schools – most notably, a number of schools which are part of Her Majesty Queen Rania's Madrasati programme.

10. Enhance the PPP model and support development of ICT sectors and align with their strategy (2)

The PPP model is another successful element of the Discovery Schools which is evident in the Madrasati initiative; it is important that not only ICT sectors play their part in PPP, but that all relevant industrial and business sectors are given opportunities to be involved in creative partnerships for the mutual benefit of all stakeholders.

11. Coordinate and align with parallel national programmes (2)

The JEI is already playing an important role in the Madrasati initiative, but there are other programmes – such as the CIDA-funded SJE school management programme which should be closely aligned with other reforms. The JEI is well placed to play a co-ordinating role between such programmes and other ERfKE components.

This workplan provides a summary of the individual activities which the JEI is required to undertake in order to implement the Education Strategy. Implicit within the plan is the requirement for a significant enhancement in the size, and educational expertise of workforce. If all the many and varied tasks are to be carried out with integrity and credibility then at least three experienced and suitably qualified education specialists should be recruited. This core team will provide the expertise with the capability of organising the large number of workstreams with many subcontractors and associate staff to manage.

This recruitment is in line with the staffing model outlined in the current business plan. However, an analysis of the current business plan reveals that many of the income targets and expectations are highly speculative and optimistic. Accordingly, the staffing model may need to be modified and this, in turn, will have a dramatic effect on the ability to deliver the workplan, unless substantial income can be generated in ways not envisaged in the current business plan.

It is recommended that a revised business plan is commissioned as soon as possible and that any further recruitment and expansion of the JEI should be determined by the priorities contained in the plan. This could require a scaling back in the JEI's operations and its ambitions.

Key Performance Indicators

In order to evaluate the success of its programmes and interventions, it is important to have agreed objective measures of success. Taking the three areas, or elements, of the JEI operations – Innovation & Research, Intervention & Change Management, and Regional Projects – a series of suitable, KPIs and objective success measures have been devised, as appropriate, for each area.

These KPI, together with targets and evidence indicators are detailed at Appendix 7 (Page 32); in summary, they are as follows:-

Element 1 – JEI as a Testbed for Innovation & Research

The JEI engages with local and international partners and the MoE to develop new e-Learning programmes. The KPIs for this element of JEI operation should be not only the number of operations undertaken eg. Smart Board ; Intel Classmate PC; or the Microsoft Innovation Teachers Network (ITN); the KPIs should also include the impact these programmes have on classroom practice and learning outcomes.

Element 2 – JEI as an education change agent

The JEI works in close collaboration with the MoE and local school directorates in school interventions eg. The Madarasati initiative. The JEI's role in these educational partnerships will be to monitor and evaluate the effectiveness of the interventions in 4 distinct and important ways:

- i) Enhanced learning outcomes
- ii) Improved teacher inputs
- iii) Enriched climate of learning
- iv) Increased quantity, quality and range of after-school programmes

A series of evidence gathering instruments is attached at Appendix 8 (Page 35). These are in the form of reflective and self-assessment questionnaires to:- capture teachers' skills, competencies and expectations before and after the programmed interventions; provide evidence of students ICT competencies and their understanding of and capacity to develop Critical Knowledge Economy skills – as reflected in the MoE National Education Strategy.

Element 3 – JEI as a regional education consultancy

The JEI develops existing partnerships and forges new relationships with local, regional and international education organisations in order to undertake consultancy, monitoring, evaluation and inspection work, on a commercial basis, to clients outside Jordan.

The KPIs for this element of the JEI will be based upon the number of teaming agreements, strategic alliances and memoranda of understanding which are established. Critically, the KPIs will also include income targets from these activities, and some indicative figures, drawn from the JEI business plan, are included in Appendix 7 .

Appendices

Appendix 1) The Principal Drivers for the JEI

Drivers from Jordanian National Education Strategy

- **Governance, management and leadership** :- Continuously rethink and define the roles of those who govern, lead and manage the educational system and assess and upgrade their knowledge, skills and attitudes;
- **The Learner** :- Delivering low-cost, high quality, educational delivery systems that will enable all learners to achieve the essential learning outcomes using a variety of methods and resources including ICT
- **Curriculum and Assessment** :- Modifying learning processes (learning how to learn); promoting the acquisition of Knowledge Economy skills: Teamwork, Adaptability, Responsibility, Positive attitudes and behaviours, Problem solving, Communication and Thinking skills.
- **Support for Learning in Schools**:- Adopting international standards as the criteria for the application and use of ICT as a tool, and as resources for learning; Providing opportunities for more capable teachers to share experiences and coach, guide and mentor other teachers.
- **Partnerships and Linkages** :- Helping to train and support school leaders to develop initiatives at a local level to increase community participation in the life of their schools; Encouraging partnerships with the private and voluntary sectors and NGOs, in delivering secondary education with an emphasis on vocational education and programmes for severely disadvantaged children; helping to align and integrate, at a local level, public private partnerships within the national education reform programme to eliminate gaps in effort and promote comprehensive services to schools and the community.

Drivers from ERfKE II Components

- **Component 2: Policy, Planning and Organisational Development:**
Monitoring and evaluation of learning outcomes; Co-ordination and Management – efficiencies for the effective use of available resources;
- **Component 3: Teaching and Learning Resources Development:** Pre-service and in-service teacher training standards; Institutional capacity for training, qualifications and supervision; Resources for learning:- e-Content development & implementation; ICT New technologies; ICT hardware; ICT software: e-Content applications, communities of practice;
- **Component 5: Quality Physical Learning Environments** : ICT standards facilities and equipment; ICT requirements for new schools and extensions.

Drivers from Non-Formal Education in Jordan report

- **Component 1 – Reorientation of Education Policy Objectives** : Education research, monitoring and evaluation, and Policy Development
- **Component 2 – Transform Education Programmes and practices for the Knowledge Economy** : Curriculum and learning assessment development; professional development and training; resources to support effective learning

Drivers from independent external evaluations of the JEI

The Overall Recommendations from EDC Study

1. Develop JEI capacity

- Expand and deepen JEI's vision of the role of ICT and clearly communicate this vision to students, teachers, principals and other educators

2. Deepen local evaluation and monitoring capacity for education technology

- Prove these solutions work in Discovery Schools before scaling up;
- Create an internal research and evaluation capacity within the JEI;
- Develop Continuous monitoring and assessment strategy for e-content quality and use;
- Support the development of a system-wide process that enables the MoE to monitor and evaluate progress towards its overall goals for quality educational outcomes;
- Require the developers of the on-line environment to adapt their resources to actual needs in the field.

3. Provide learning opportunities for principals, teachers and supervisors

- Support the development of a wider variety of high quality professional development programs for principals and teachers;
- Support the development of a more robust set of professional development offerings for teachers about ICT integration and new, student-centered strategies for teaching and learning;
- Create a high quality professional development program for school leadership;
- Create a high quality professional development program for MoE supervisors;
- Encourage informal opportunities for teachers and school principals to learn and share strategies.

4. Continue supporting innovation and distribution of e-content and infrastructure

- Provide additional ICT resources to the Discovery Schools;
- Develop simple, sustainable solutions to critical infrastructure problems;
- Continue piloting with new technology platforms and tools;
- Institutionalize the process of improving e-content and innovating in the use of ICT in grades 1–12 in public school education, using the Discovery Schools as a test bed for future improvements and innovations;
- Share the e-content being developed by teachers and students;
- Create strategies to support the off-line use of technology.

5. Expand and fortify technical support and maintenance strategies to go to scale

- Train more lab technicians to prepare for the increasing demand;
- Expand the internship program to further strengthen technical support capacity;
- Experiment with decentralization and/or outsourced maintenance systems;

- Standardize hardware across schools.

6. Provide opportunities for students and community

- Increase the opportunities students have to use ICT in meaningful ways.
- Leverage infrastructure investments to create community outreach and after school activities which provide students and the community more access to the technology.
- Develop a model for scaling up that fosters, rewards, and disseminates success.
- Create opportunities for students to acquire technical knowledge and experience in schools by establishing student tech support programs

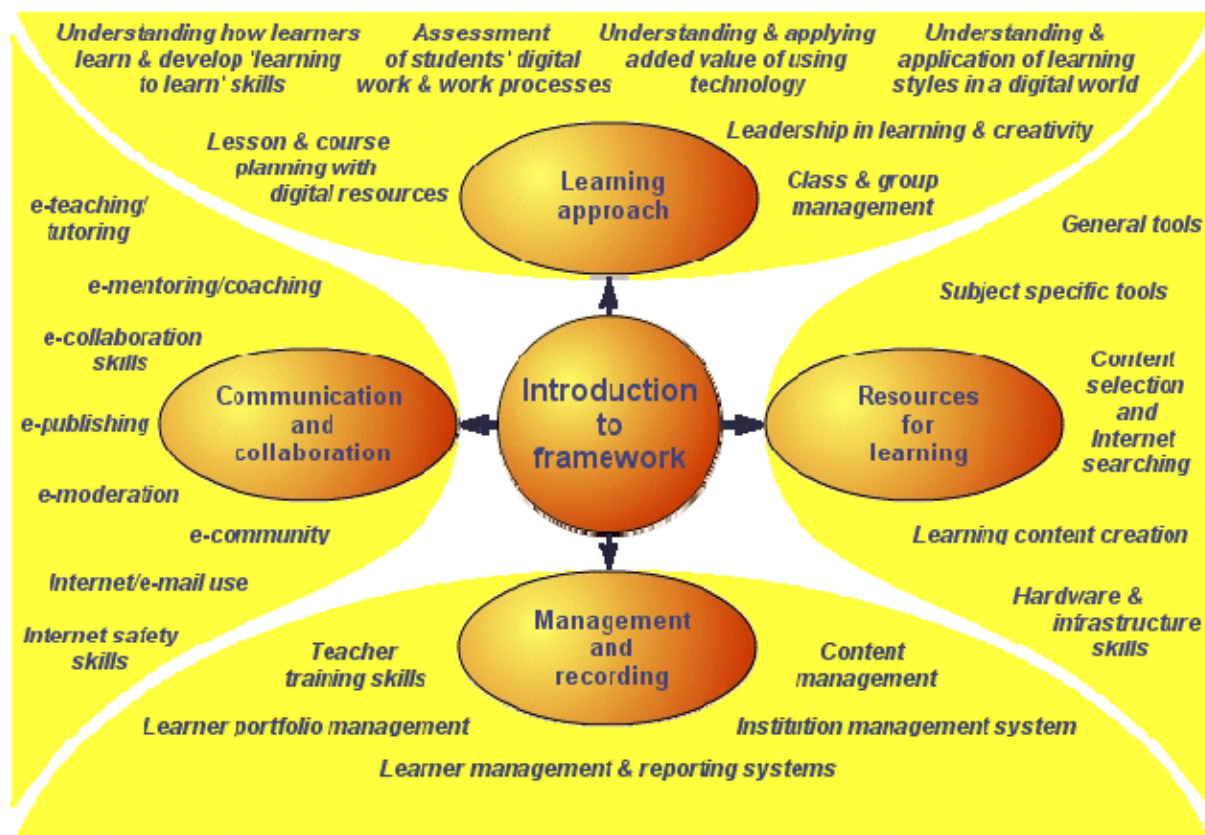
Drivers from the JEI Business Plan – (Y-Consult June 2007)

1. Improve the development and delivery of education to citizens through public-private partnerships.
2. Introduce 21st century learning and teaching skills into the public education sector
3. Encourage the development of an efficient public-private model for the acceleration of educational reforms in developing countries based on unleashing the innovation of teachers and students through developing and expanding education strategies and approaches.
4. Build the capacity of partners for the development of innovative learning solutions in partnership with world class firms, and creating economic value that will lead to mutually beneficial business opportunities.
5. Leverage an environment of national commitment and corporate citizenship to build a model of reform and replicate it in other countries in the region.
6. Expand innovation and research to accelerate and effectively support education reform and develop economic and business models.

Appendix 2) - Summary of existing JEI Projects

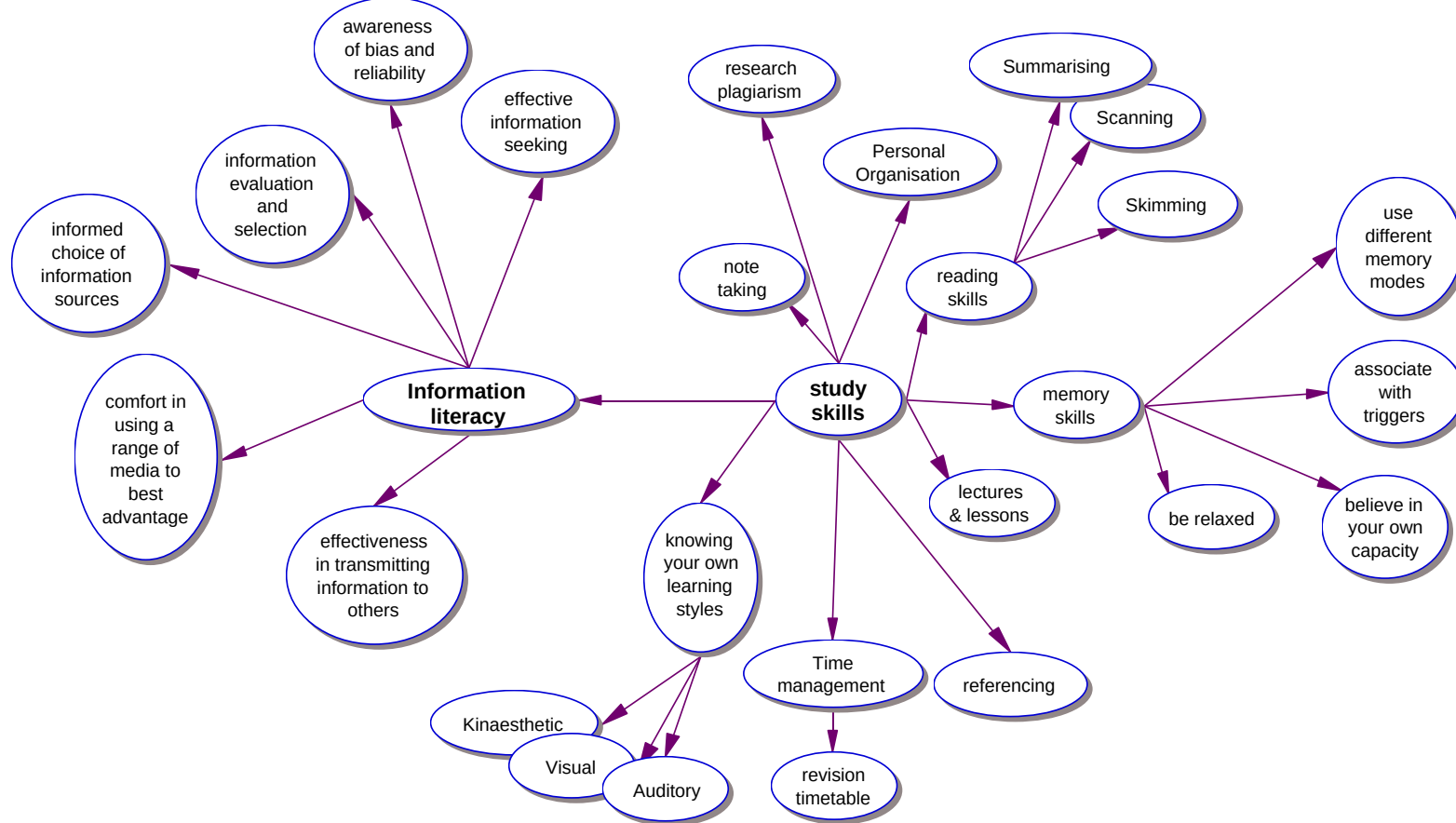
Project Title	Activities	Status
1) (1-3) Training	Generic e-Learning training for teachers being developed in association with MENHAJ; to be installed on Eduwave and implemented with the guidance of the JEI	Live
2) Teaching for Understanding (TFU) Training	Donor-funded distance learning CPD programme developed by Harvard University for teachers to transform their approaches to deliver 21 st Century learning; programme implemented and monitored by JEI	Pilot Programme complete. Evaluation proceeding
3) English as a Foreign Language (EFL) Strategy	Monitoring and evaluation by JEI of the implementation of the English On-line interactive e-Curriculum in 12 Discovery Schools	Live
4) Site Survey	A survey of the status of the hardware, connectivity, ICT Lab usage, and teachers' use of e-Curricula	Live
5) Think Quest – Oracle	4 schools participated in a project-based contest under the guidance of JEI; JEI has recently been offered the opportunity by Oracle to become a partner for Think.com implementation in selected Discovery Schools	Project proposal phase
6) Interactive Whiteboard (SMART)	Installation of 16 interactive whiteboards which were donated by Smart. JEI overseeing installation; performing initial training and evaluation effectiveness	Live
7) CADER Change Management	Whole school reform programme addressing fundamental issues relating to school organisation and the implementation of ICT. Pilot programme in 8 schools nearing completion	Live
8) Reading Companion	On-line talking books programme to assist in EFL teaching. Programme to be offered to Discovery Schools as after-school and summer vacation programme	Project inception phase
9) Comprehensive Subject Specific Training	JEI in monitoring role for the implementation of training programmes relating to the e-Curricula programs	Live
10) HP Classmate – pilot study	100 X Intel Classmate PCs are to be deployed in two Discovery Schools in contrasting implementation models.	Project proposal phase
11) The Four Nations Classroom	The Centre for Global Education (Canada), providing e-Learning cultural exchange programs via video conferencing	Project planning phase
12) Al Salt school rehabilitation	School earmarked as part of the Madrasati initiative for rehabilitation. JEI is proposing involvement in technology implementation & change management.	Project proposal phase

Appendix 3) SUMMARY OF TEACHERS' NECESSARY e-LEARNING SKILLS⁷



⁷ Roger Broadie – European Education Partnership 2007 (<http://www.eep-edu.org>)

Appendix 4 – Summary of Information Literacy and Study skills for Students



Appendix 5) A School Transformation Action Plan

1. Initiating - Infrastructure specification TNA and implementation plan

An audit is completed of the technical infrastructure and of the teachers ICT skills.

The **Leadership Team**, with the assistance of a JEI consultant (Change Mentor), focuses on discovering what is working well and why and what things need to change.

Actions	Who?	What?	How?	Tools
Analysis and evaluation leading to a solution which is specifically tailored for this school and looking at new ways of working	Lead Mentor Leadership team	Examine organisational culture Identify what is working well in your school and why it works well. Develop understanding and articulation of school transformation priorities	Reflection and review through synthesis of school self-evaluation and remodelling outputs. Discussion/analysis around self evaluation Workshop with stakeholders – what are the drivers for change? What do we already do well?	Examples of analysis tools used in the Discover Phase Structured school Self-evaluation, School Shaping Workshop, Standard business organisational analysis tools
Supported needs analysis emerging from the self evaluation exercise	Lead Mentor Leadership team	Review processes and structures Identify the Change Agents	Needs, process and culture analyses Use of audit and prioritisation tools Identify quick wins What does personalized learning look like in your organisation?	
Technical Audit of ICT infrastructure	JEI technical team	Check the network integrity and functional status of ICT	School visit and site survey	Check lists ; questionnaires

2. Establishing - e-Curricula and pedagogic training

Change Agents (made up of a range of stakeholders) agree the ways in which the school should operate in the future to ensure continuous improvement through better use of teaching and learning resources and through reflective practice.

Actions	Who?	What?	How?	Tools
Supported identification of a bespoke change strategy	Change Mentor (external support) Leadership team Change Agents (school members)	Develop a collaborative approach Understand change drivers and predict impact Identify the <i>Transformation Team</i>	' <i>Change Summit</i> ' Change process planning Assumption analysis	Structured questionnaires Established project management methodologies

3. Embedding – agreeing the changes and making them stick

The **Transformation Team** (which includes Change Mentor from JEI) designs how the change will be brought about.

Activities	Who?	What?	How?	Tools
The dynamic partnership approach. A <i>Transformation Team</i> is made up of key personnel from the school and JEI to carry forward phases 2 & 3	Transformation Team Change Champions	Co-design through a conversational approach Establish shadow structures Develop dispersed leadership of change	Facilitation of <i>transformation team</i> discussion and contribution of specialist advice to develop and widen vision. Change team – skills development and team building Identification of learning leaders / coaches Stakeholder mapping – what/how Communication plan	<i>International project reports eg. Leading from the middle – UK National College for School Leadership</i> Established project management methodologies
Engaging, empowering and working with stakeholders to develop ownership of change	Transformation Team Change Champions Stakeholders	Develop the skills for participation Secure widespread ownership of change	Briefings for governing committee and other key stakeholder groups. Student reps / student voice questionnaires Assumption analysis & visioning - participative workshops with stakeholder groups. Analysis of stakeholder data Structured discussion in logical team meetings.	
Scoping the <i>transformation agenda</i> with clear milestones	Transformation Team	Define the process and targets for delivering transformation – how will you judge success?	Initiative or project planning, with integration into school improvement plan Programme planning linked with other initiatives	

4. Developing – the transformation agenda is developed to embrace lifelong learning

The transformational agenda is delivered by **Change Champions** support by Change Mentors (through phone, web portal, e-communication).

Activities	Who?	What?	How?	Tools
Leading a professional development programme for staff –	Change Mentors	Develop the specialist knowledge, skills,	Formal training sessions Workshop sessions	<i>Tools for the Development phase include:</i>

building internal capacity to deliver the <i>transformational agenda</i> beyond the initial supported phase.	Change champions	understanding and attitudes for change implementation. Develop the <i>learning organisation</i> .	(collaborative learning) Service development support (time saving support) Mentoring and coaching Modelling and co-delivery	Collaborative online mentoring support Email and on-line support
Support for the implementation and renewal strategy. Define a sustainable change model for future change management. Involve members of the local community in the process	Change Mentor phone, portal and e-communication Leadership team Transformation Team Change Champions	Recognise and reward those who lead the change process in the school. Re-engineer educational processes and transform outcomes. Accredit Change Mentors for the school	Coaching and mentoring to maintain momentum Individual transformation plans for key personnel Developing job descriptions with new focus Supporting and recognising emergent leaders of the change Articulating and disseminating the new 'best practice' – policy, plans and documentation of learning. Deciding the next steps for transformational change – moving on to a new focus.	Trio approach (with external support, school member and local community member) One to one support – mentoring of senior managers as necessary.

Appendix 6 - A Selection of Free and Open Source Software Titles for Education

Graphics

GIMP – Photo Manipulation Program
OpenOffice.org Draw – The Ultimate Graphics Bundle
Xara Xtreme – Fast & Versatile Vector Graphics
Inkscape – Scalable Vector Graphics
Krita – KOffice Paint Application
QCAD – 2D Computer Aided Design and Drafting
Google SketchUp -A 3D software tool that combines a tool-set with an intelligent drawing system.

Desktop Publishing

Scribus – Desktop Publishing Suite

Multimedia

VLC – Networked Media Player
MPlayer – Versatile Media Player
Audacity The Free, CrossPlatform Sound Editor
Rosegarden – MIDI Sequencer
Note Editor – Score Editor
CinePaint – Movie Image Processing

Scientific Applications

KStars – The Desktop Planetarium
Kalzium – Periodic Table
Celestia – A True Space Simulator
Quantum GIS Geographic Information System
Stellarium – A Planetarium for the Classroom
Virtual Terrain Project – 3D Real World Simulations

Mathematical Applications

Kig – Geometric Construction Program
KmPlot – Mathematical Function Plotter
KMathTool – A Resourceful Maths Tool
KBruch – Fractional Exercises
ElectricForm – A program to calculate electronic values
KMathsTest – Random Mathematical Equation Generator
Octave – Numerical Computations
XPlot – Maths Plotting Tool

Human Languages

KMessedWords – Jumbled Words
KLearnSpelling – Learn to Spell
KLettres – Helps Begin Learning Different Languages
KTranslator – Language Translator

Computer Programming

KTurtle – Introduction to Programming
StarLogo – Modelling Complex Systems
KDevelop – Integrated Development Environment
Eclipse – Java Integrated Development Environment

Programs Suitable for K- Grade 5 Pupils

TuxPaint – Fun Paint Program for Kids
Pysycache – Application for teaching to move the mouse
blinKen – The Linux version of Simon Says
KHangMan – The classical game of Hang Man
Keyano – Use a PC keyboard as a Musical Instrument
Tux Typing – A fun typing program

Appendix 7

Key Performance Indicators and Targets for Implementation of the JEI Education Strategy

Element 1 – A Testbed for Innovation and Research

Actions	Key Performance Indicators	Targets	Evidence
JEI engages with international partners for new learning programmes	Number of projects undertaken with international partners; memoranda of understanding	Successful completion of programmes with local and international partners:- e.g.	Outcomes of joint projects; teaming agreements; memoranda of understanding; strategic alliances
JEI engages with the MoE to develop new learning programmes		Smart – implement new learning with IWB	Lesson observation assessments
JEI engages with local partners for new programmes		Intel – complete Classmate PC pilot	Completed evaluation and case study of Classmate pilot
		Microsoft – Develop Innovative Teachers Network	Teachers' involvement with ITN
JEI undertakes the project partnership with clear aims, objectives and success measures	Rigorous monitoring and evaluation strategy is implemented with KPIs as detailed below in Element 2 - improved learning outcomes, and enhanced teacher inputs	Oracle – Establish schools as part of the Think Quest international online community	Schools involved in Think Quest produce artefacts; projects; joint presentations with international partner schools
		There is a measurable improvement in teaching inputs and learning outcomes as a consequence of the innovation programme	Lesson Observation assessment Teacher and student self-assessment matrices
JEI initiates its own research projects	Suitable projects initiated based upon improved learning outcomes;	Research projects initiated (one per semester) in the areas of:- - Teachers' professional development - Implementation of classroom technology - Curriculum development and classroom practice based upon project-based	Lesson observation pro formae and evaluation instruments
	Research findings published in learned journals		Publications in journals Conferences organised and completed

Actions	Key Performance Indicators	Targets	Evidence
	Conference(s) attended by delegates from across the region	learning. The JEI organises conferences on at least an annual basis to disseminate ideas and findings	evaluation forms from delegates

Element 2 – An Education Change Agent

Actions	Key Performance Indicators	Targets	Evidence
Complete school interventions and change management programmes using the 4-step process - - Initiating - Establishing - Embedding - Developing	<u>Enhanced Learning Outcomes</u> Improvements in: - test scores; - research skills; writing skills; - ICT skills; presentation skills; - Independent learning skills; - Collaborative working; - Knowledge economy skills <u>Enhanced Teacher Inputs</u> Improvements in teachers': - basic technical skills; - use of technology for teaching and learning; - Promoting project based learning <u>Enhanced Climate of Learning</u> - Flexible use of timetables and lessons. - Consultative decision making and organizational style <u>After school programmes</u> - Number, quality and range of after school programmes; number of students enrolled; - Number, quality and range of community learning programmes	Accurate base-lines assessments of schools' status Complete e-Curricula and pedagogic training courses Appoint of school-based change teams with internal change champions Establish culture of continuous improvement and professional development in the school; Establish out-of-hours after school programmes for students; Establish out-of-hours programmes for parents families and local community; Teachers use ICT routinely for lessons as necessary – not just for e-Curriculum delivery – seek an aggregate 25% increase in ICT use; At least one example of project based learning per semester ICT/computer labs used on a more drop-in basis as well as for regular timetabled classes Some devolution of responsibilities to subject co-ordinators and middle managers. The school ICT facilities should be used for out of hours programmes for students and/or members of the local community for at least two afternoon / evenings per week.	Technical audit report; Teachers' skills assessment; students' skills assessment; Institution e-Readiness assessment Course evaluation questionnaires Minutes of meetings; change champions; reflective journal School improvement plan Students' performance in external tests eg. ERfKE assessments; school-administered tests; Tawjihi performance TIMSS, PISA, LAMP, and NAFKE Teachers' workplans; and students portfolios Lesson observation forms completed by external evaluators Minutes of middle manager and subject co-ordinator meetings Evidence from attendance registers; participants' evaluation forms; evidence also from course curricula pursued.

Element 3 - As a regional consultancy resource for technology implementation and education reform

Actions	Key Performance Indicators	Targets	Evidence
Engage with partners as necessary to undertake professional development for school personnel, curricula, monitoring and evaluation, technology utilization in the classroom.	Number , quality and range of regional activities. Partnerships, teaming agreements, strategic alliances and MoU with regional and international consultancy organisations Income derived from consultancy operations	Partnership and teaming agreements reached with local, regional and international commercial consultancy and other organisations such as foundations and not-for-profit NGOs JEI to develop its own consultancy portfolio to be able to bid for tenders in its own right Business plan indicates annual income derived from research & innovation activities to be as follows:- 2009, \$65K; 2010, \$260K; 2011, \$276K	Project reports from partnership operations Contracts, purchase orders, invoices

Appendix 8 – Evidence Gathering Instruments

Teachers' Self Assessment of ICT Competence

1. My use of ICT for personal and professional needs

1.1. My ICT Skills

Focusing	I have few ICT skills and still need a lot of help when using ICT or learning new applications or technologies	
Developing	I often need support when using ICT, or when learning new applications or technologies.	
Establishing	I sometimes need support when learning how to use new applications or technologies.	
Enhancing	I learn how to use new applications or technologies without support.	

1.2. My personal use of ICT outside of my role

Focusing	I rarely make personal use of ICT.	
Developing	I sometimes make personal use of ICT.	
Establishing	I often make personal use of ICT.	
Enhancing	I make widespread and regular personal use of ICT.	

1.3. My use of ICT for professional tasks

Focusing	I make use of ICT in my professional tasks only when essential.	
Developing	I sometimes find ICT useful in my professional tasks.	
Establishing	I often find ICT useful in my professional tasks.	
Enhancing	I make widespread and regular use of ICT in my professional tasks.	

1.4. Supporting others in their use of ICT for learning and teaching

Focusing	I still need a lot of support myself.	
Developing	I have some knowledge of some uses of ICT in teaching that I could share with others.	
Establishing	I feel fairly confident in the use of ICT for learning and teaching but would need some coaching in order to be able to support and develop others.	
Enhancing	I have already supported other staff in their use of ICT and am confident that I can help others to improve their effectiveness in using ICT.	

2. My use of ICT for learning and teaching

2.1. Identifying opportunities to use ICT in teaching

Focusing	I am uncertain about when to use ICT in teaching.	
Developing	I am beginning to recognise when to use ICT in teaching.	
Establishing	I am increasingly recognising when to use ICT in teaching.	
Enhancing	I know when to use ICT in teaching..	

2.2. Planning the use of ICT in teaching

Focusing	I rarely plan for the use of ICT in my practice.	
Developing	I occasionally plan for the use of ICT in my practice.	
Establishing	I regularly plan for the use of ICT in my practice.	
Enhancing	I always plan for the appropriate use of ICT in my practice.	

2.3. Evaluating ICT resources

Focusing	I rarely use ICT-based resources to support teaching.	
Developing	I can make use of ready-made resources to support teaching but I am unsure what makes a good ICT resource.	
Establishing	I evaluate and adapt available resources in order to select the most appropriate for teaching needs.	
Enhancing	I evaluate a range of available resources, and adapt or create new ones to meet pupils' needs.	

2.4. Making appropriate use of ICT in teaching

Focusing	I make little or no use of ICT in my practice and use a narrow range of technologies.	
Developing	I make some use of ICT in my practice but am not sure about its appropriateness. I experiment with a wider range of technologies.	
Establishing	I make regular use of ICT in my practice and can judge its appropriateness. I am increasingly using a wider range of technologies.	
Enhancing	Appropriate use of ICT is part and parcel of my everyday practice and I use a wide range of available technologies.	

2.5. Understanding how ICT can improve teaching

Focusing	I am uncertain how ICT can improve teaching.	
Developing	I have some awareness of how ICT can improve teaching but cannot translate this into my own practice.	
Establishing	I increasingly understand how ICT can improve teaching and am beginning to put this into my own practice.	
Enhancing	I have a clear understanding of how ICT can improve teaching and routinely put this into practice.	

2..6. Understanding how ICT can improve/support/ enhance pupils' learning

Focusing	I am uncertain how ICT can improve pupils' learning.	
Developing	I have some awareness of how ICT can improve pupils' learning and have seen some evidence of pupils' progress.	
Establishing	I increasingly understand how ICT can improve pupils' learning and often see evidence of the impact on pupils' progress.	
Enhancing	I have a clear understanding of how ICT can improve pupils' learning, and there is strong evidence of the impact on pupils' progress.	

2.7. Assessing pupils' ICT capability

Focusing	I am uncertain about how to assess pupils' ICT capability or how to make effective use of such information when planning lessons using ICT.	
Developing	I can assess some aspects of ICT capability and sometimes take account of this when planning lessons using ICT.	
Establishing	I assess most aspects of pupils' ICT capability and often take account of this when planning lessons using ICT.	
Enhancing	I have a clear understanding of the pupils' ICT capability and invariably plan ICT activities that take account of their differing capabilities in ICT.	

2.8. Reflecting on my practice using ICT in the classroom

Focusing	I find it hard to reflect on my use of ICT in the classroom and do not know how to improve my practice.	
Developing	I try to reflect on the use of ICT in the classroom and can sometimes see ways that I could improve on my practice.	
Establishing	I often reflect on my use of ICT in the classroom and consider its impact on pupils. I adapt my practice as a result of my evaluation.	
Enhancing	I always reflect on the impact that my use of ICT has on learning and teaching, and continuously seek ways to improve my practice.	

3. Use of ICT by teachers in my school/subject area

3.1. Teaching using ICT

Focusing	Where teachers do use ICT within their teaching it is mainly to replace traditional teaching approaches and motivate pupils.	
Developing	Teachers use ICT to engage and motivate pupils in their learning.	
Establishing	Teachers use ICT to enhance learning experiences and approaches not readily accessible through traditional methods.	
Enhancing	Teachers use ICT to enable pupils to learn for themselves and to extend their learning opportunities. These students take responsibility for their own learning.	

3.2. Using ICT to extend opportunities for learning

Focusing	Learning with ICT takes place mainly within lesson time.	
Developing	Pupils have opportunities to use ICT to learn outside of lessons.	
Establishing	Pupils use ICT resources to learn at times and places appropriate to their needs	
Enhancing	The school provides guidance, online support and recognition for pupils' own learning with ICT	

3.3. Pupils are taught how to learn using ICT

Focusing	There is little or no project-based internet learning or systematic teaching of information literacy skills.	
Developing	Some teachers use project-based internet learning and teach pupils relevant information literacy skills.	
Establishing	Most teachers use project-based internet learning, and support pupils to develop information literacy skills.	
Enhancing	Project-based internet learning is used throughout the school/department, and information literacy skills are taught to all pupils.	

3.4. Teachers' understanding of how ICT impacts on pupils' learning

Focusing	Most staff see the impact of ICT on motivation and presentation.	
Developing	Some staff understand how ICT can improve pupils' learning and achievements.	
Establishing	Most staff understand how ICT impacts on pupils' learning and achievements.	
Enhancing	All staff understand how pupils' learning and achievements are improved through the use of ICT.	

3.5. Teachers use ICT to personalise pupils' learning

Focusing	There is no differentiation in the way that ICT is used to support pupils' learning.	
Developing	Some staff use ICT to support specific learning needs or abilities to maximise individual progress.	
Establishing	Most staff use ICT to support a range of different learning needs and abilities within the classroom to maximise individual progress.	
Enhancing	All staff use ICT to match and support individual pupils' learning needs and styles in order to maximise individual progress.	

4. Leading ICT in my school/subject area

4.1. The school/subject vision for ICT to support learning and teaching

Focusing	There is no collective understanding or written statement about the potential for ICT to support learning and teaching.	
Developing	There is a vision statement which identifies the potential of ICT in this subject/school.	
Establishing	There is a vision statement which identifies the wide-ranging nature of ICT. It is shared by all staff and forms the basis of developments in the subject/school.	
Enhancing	There is an innovative vision statement for the school/subject that matches the school's overall school aims. It recognises the changing potential of ICT and its impact on staff and pupils.	

4.2. ICT in development planning

Focusing	There is no detailed ICT development plan for the school/subject. If there is one, it hasn't been updated recently.	
Developing	There is an up-to-date school/subject plan with some short-term targets for ICT. Funding is allocated on a formula basis, similar to other subjects.	
Establishing	There is a long-term strategic plan for future developments which forms part of the school improvement plan. This is supported with an up-to-date ICT plan with short-term targets and action plans. Costs are identified and allocated.	
Enhancing	There is a detailed ICT development plan which shows short- and long-term targets, costings and a commitment to developing ICT across the whole school and curriculum.	

4.3. Curriculum leadership of ICT

Focusing	No one has responsibility for the leadership of ICT in my field/subject.	
Developing	Leadership of ICT in my field/subject is delegated to someone with appropriate skills..	
Establishing	An appropriate person has taken on responsibility for developing ICT in this field/subject.	
Enhancing	An appropriate person actively leads the strategic developments of ICT in the field/subject.	

4.4. Staff development in ICT

Focusing	Individuals have to identify their own needs and training.	
Developing	The school makes use of its own resources or of LEA or external courses for identified staff.	
Establishing	Annual targets are set for all staff. These are included in the school development plan. Staff are supported to achieve their targets through a variety of in-house or external development opportunities.	
Enhancing	All staff in the school/department have a continuing professional plan for ICT. These are reviewed regularly and the impact of development on pupils' progress and achievements evaluated in the light of training undertaken.	

4.5 Evaluating impact

Focusing	No attempt has been made to evaluate the impact of ICT on learning, teaching or achievements.	
Developing	Some teachers are exploring ways to evaluate the impact of ICT on learning, teaching and achievements..	
Establishing	The school/subject has some strategies for evaluating the impact of ICT on learning, teaching and achievements.	
Enhancing	The school has a clear approach to evaluating the impact of ICT on learning, teaching and achievements.	

Summary Grid

		Fo	De	Es	En
1	My use of ICT for personal and professional needs				
1.1	My ICT Skills				
1.2	My personal use of ICT outside of my role				
1.3	My use of ICT for professional tasks				
1.4	Supporting others in their use of ICT for learning and teaching				
2	My use of ICT for learning and teaching				
2.1	Identifying opportunities to use ICT in teaching				
2.2	Planning the use of ICT in teaching				
2.3	Evaluating ICT resources				
2.4	Making appropriate use of ICT in teaching				
2.5	Understanding how ICT can improve teaching				
2.6	Understanding how ICT can improve/support/ enhance pupils' learning				
2.7	Assessing pupils' ICT capability				
2.8	Reflecting on my practice using ICT in the classroom				
3	Use of ICT by teachers in my school/subject area				
3.1	Teaching using ICT				
3.2	Using ICT to extend opportunities for learning				
3.3	Pupils are taught how to learn using ICT				
3.4	Teachers' understanding of how ICT impacts on pupils' learning				
3.5	Teachers use ICT to personalise pupils' learning				
4	Leading ICT in my school/subject area				
4.1	The school/subject vision for ICT to support learning and teaching				
4.2	ICT in development planning				
4.3	Curriculum leadership of ICT				
4.4	Staff development in ICT				
4.5	Evaluating impact				
	totals				
	%				

Fo=focussing De=developing Es=establishing En=enhancing

Computer Literacy & ICT Skills Assessment

Candidates to Grade Themselves on 1- 5 Scale

1= novice/little understanding

5 = Expert /fully understand

1. Basics of Using a Computer

Grade 1-5

I Know the basic types of computer

Tablet

Laptop

PC

I can identify the components

hard drive

Monitor

RAM

USB

port

I understand the purpose of these peripherals

keyboard

mouse

Trackpad

Printer

Plotter

2. Desktop

I can find my way around the Windows Desktop

I know the meaning of the various basic icons

I can select & move Icons

I know the function of the start button

I can shut down a computer / restart / hibernate

3. Windows

I understand the Windows environment

I can identify the parts of a window

I can use the close, minimise, restore buttons

I can use the scroll bars

I understand about the Taskbar and Toolbars
I can use menus effectively
I can move between windows

4. Creating a Document

I know how to choose an insertion point
I can enter text
I can operate the toolbars
I can print successfully and change printers
I can format text, change fonts and size
I can insert pictures or special characters

5. File Management

I understand about files and folders
I know about different file types
I can cut, copy and paste
I can save to different locations

6. Creating a Spreadsheet

I understand that a spreadsheet is made up of cells
I know that there are different sheets in a spreadsheet
I can perform simple calculations using the spreadsheet
I understand about cell references

I know about absolute and relative cell references
I can represent data from a spreadsheet in chart formats

7. Creating a PowerPoint Presentation

I can create a PowerPoint presentation using text
I can create a PowerPoint presentation using text+ graphics
I can incorporate animations in a PowerPoint presentation
I can incorporate sound in a presentation
I can incorporate hyperlinks in a presentation
I can use different slide transition styles

8. The Internet

I can explain about the Internet and the world wide web
I know about email
I know what a web browser is
I know what a homepage on a website
I know what a URL is and I can explain its importance
I understand hyperlinks
I know how to set my favourites in a browser
I understand about browsing history and how to delete it
I can navigation back and forward
I know about search engines and I can use them effectively
I can easily finding the information I want on the web
I am confident about downloading files

9. E-mail

I can give an overview and explanation of email
I know about e-mail accounts
I understand the special characteristics of webmail
I can successfully send an e-mail
I know the essential parts to an email address
I understand email message fields – To, CC and Subject
I know how to receive e-mail
I can reply to and forward e-mail
I know about attachments and about size and security

TOTAL

0

Critical Knowledge Economy Skills

Candidates to Grade Themselves on 1- 5 Scale

1= novice/little understanding 5 = Expert /fully understand

1. Academic Skills

Grade 1-5

I know how to write for different purposes

An essay for school

A letter to a friend

A formal letter

An
email

I can interpret data

from line graphs

from pie charts

from bar charts

I can present information effectively

Using PowerPoint presentations

Using a chalkboard/whiteboard

Using the interactive features of a Smart board

I make decisions logically considering all the evidence

I think critically and know the difference
between objective and subjective judgements

I am good at solving problems using different strategies

In disputes I am able to understand each point of view
and to form a judgement based on my experience

2. Personal Management Skills *

I am good at organising my use of time effectively

When I'm given a task:

I understand about priorities

I know the importance of setting goals

I am adaptable and think of novel ways of completing tasks
I work well as part of a team
I can negotiate and compromise when necessary
I know the difference between personal and team goals
I know the importance of being reliable and dependable
I am adaptable to change

TOTAL

0

* These statements should be backed up a personal portfolio of evidence