



Summary Report
Evaluation of the Intel® Teach Program Essentials Course
Pre-service Curriculum
2005- 2007

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1 OVERVIEW OF THE EVALUATION PROJECT

The evaluation of the Intel® Teach Program Essentials Course - Pre-service Curriculum, was initiated in the Asia Pacific Region in 2005. It was designed to gain evidence and understanding of the program's impact on the teaching practice of teachers who had undertaken the program during their pre-service course and the factors that facilitate and hinder its effective implementation in pre-service education.

The evaluation project has moved through three phases:

- **2005** – Development and piloting of the evaluation strategy and instruments in selected countries.
- **2006** – Roll out of the evaluation strategy, which included some qualitative data collection but mainly provided significant quantitative data on the impact of the Essentials course on current pre-service teachers and former pre-service teachers who were now teaching in schools.
- **2007** – A focus on gaining additional, mainly qualitative data to better understand key influencing factors and practices and specific Best Known Methods (BKMs) that increase success.

The Asia Pacific countries involved at various levels over the three years were Vietnam, Taiwan, Philippines, Pakistan, Malaysia, Korea, Japan, India, China, and Australia.

Deakin University has developed, coordinated and supported the pre-service evaluation. Within each country, local evaluators have been responsible for its implementation. Therefore, while based on a common evaluation framework and set of survey instruments, the approach and instruments have been localized in each country to suit their specific context and needs. Country specific reports are available within each country.

2 IMPACT OF THE INTEL TEACH ESSENTIALS COURSE

Overall, when implemented effectively the pre-service Intel Teach Program Essentials Course is having strong, positive impact on many pre-service teachers, teacher educators and Teacher Education institutions.

Implementation at the Institution Level

For many of the Teacher Education Institutions the Intel Teach Essentials Course was a new approach to teaching (**51%** 'very new' and **43%** 'moderately new').

Typically, they became involved in order to:

- develop more qualified, competent and globally competitive graduates.
- improve and update the pedagogy and curriculum in their courses, based on the latest trends and directions in technology and education.
- enhance computer skills and confidence for their students and faculty.

There were strong differences between teacher education institutions within and across countries, particularly in regard to the length and structure of their pre-service courses, governance structures and levels of autonomy. This created wide variation in the implementation of the pre-service Essentials Course (for example, its length, positioning and status within the qualification).

Main challenges to effective implementation included inadequate technology resourcing and infrastructure, rigidity in the curriculum and faculty resistance to change. Lack of time and computer skills and large student numbers were also problematic.

Strong leadership involvement and support was vital in overcoming these challenges, particularly through increasing the technology access and lifting the status of the program. Broad understanding and support for the program across the faculty and support and influence at a broader level (Ministry of Education and other governing bodies) were also important.

For many institutions, adopting the Essentials Course led to an increased standing within the educational community, more enthusiastic, knowledgeable and skilled faculty and greater employability of their graduates.

Impact on the Teacher Educators

Moving from lecture style to student centered, collaborative approaches, as well as developing computer skills and increasing their use of technology, were the most significant changes for the Teacher Educators. Many were also more enthusiastic and motivated in their work, particularly as they saw the changes on their pre-service teachers.

Impact on the Pre-service Teachers

As well as increasing their computer skills, significant changes to the way pre-service teachers were learning were noted by the teacher educators and the pre-service teachers themselves. This included:

- An ability to communicate their ideas and opinions more confidently.
- Improved presentation skills and quality in their work.
- Increased independence in and responsibility for their learning, time management and endurance.
- Increased creativity, higher order thinking, problem solving and resourcefulness.
- Greater understanding of the connection between teaching and learning and technology and ways to use the technology more meaningfully in the classroom.

Impact of Practicum Opportunities on the Pre-service Teachers

Post Practicum Survey data indicated mixed levels of opportunity to practice the Essentials Course learnings. Only **57%** of pre-service teachers conducted technology integrated lessons during their practicum. However, **72%** were able to implement project based learning approaches.

For those who had the opportunity to practice, the impact was very positive:

Figure 2: Impact of the Essentials Course when applied during the Practicum

93%	gained confidence in their ability to integrate technology in their curriculum
96%	gained a better understanding of the requirements for effective technology based teaching
95%	felt that the students were motivated
96%	saw positive outcomes for the students
96%	consider technology will be part (most to a moderate or large extent) of their teaching practice when they become a teacher
97%+	consider project based learning, Essentials Questions and group work will be part of their teaching practice (most to a moderate or large extent)

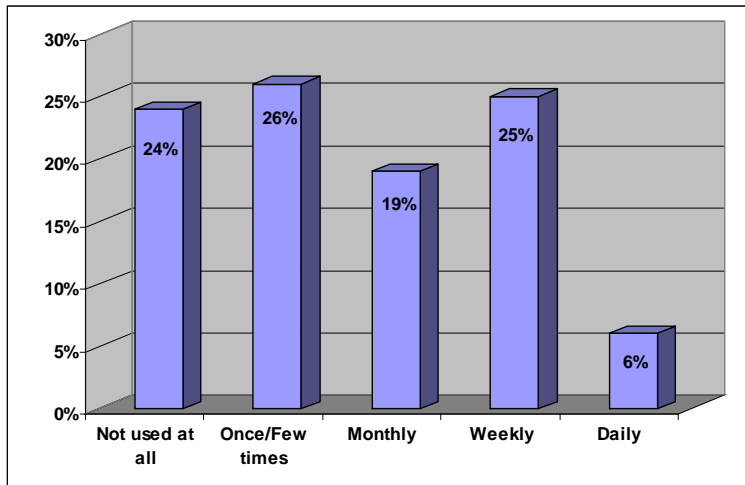
Key factors influencing the impact of the practicum included:

- The levels of technology and infrastructure.
- The alignment of school curriculum and pedagogy with the Intel Teach approach.
- The level of enthusiasm, support and openness to new ideas at the schools.
- The involvement of the schools in the in-service Essentials Course.

Impact on the 'new teachers' (former pre-service teachers who completed the Essentials Course)

76% of the 'new teachers' have engaged in technology based lessons since they commenced their teaching position, 31% weekly or more.

Figure 3: New Teacher use of Technology



For many, the Intel Teach unit plan they development has provided them with a structure for effective integration of technology in their classroom.

- 56% of 'new teachers' have used all or part of the unit plans they developed in pre-service.
- 73% of 'new teachers' have developed new Unit Plans based on the Intel Teach approach (providing a strong indication that the Essentials Course learnings are being applied to their new teaching contexts).

Use of the PBL approaches covered in the Essentials Course was strong, particularly regarding:

- Essential Questions (91% use them to some extent -31% in most lessons and a further 38% in over half).
- Students presenting work to the class (87% to some extent).
- Students working in groups (81% to some extent).
- Students using technology to develop higher order thinking (68% to some extent).
- Students conducting independent research using the internet (63% to some extent).
- Students using technology to produce and present their own work (57% to some extent).

The main reasons for not implementing technology based lessons and the main challenges for those who did related to inadequate technology resourcing and accessibility, low levels of encouragement from the schools, the approach to teaching and the curriculum was very different and there was insufficient time.

Overall, the 'new teachers' surveyed were very positive about the value of the Intel Teach program Essentials Course. 93% considered the Essentials Course had been a valuable addition to their pre-service teacher training (55% very valuable and 38% valuable). They also felt that their practicum opportunities had given them confidence, understanding and motivation to implement technology based teaching practices.

The impact on students

As indicated in the table below, new teachers felt that the use of technologies had a very positive impact on student learning when compared to lessons in which technology was not used.

Figure 5: The Impact on Students as observed by the New Teachers

Impact on Students	Agree or strongly agree
Students were motivated and actively involved in the lesson	90%
Students developed greater skills and confidence in using computers	87%
Technology based lessons addressed students' different learning styles	84%
Students worked together more often	83%
Students were able to communicate their ideas and opinions with more confidence	82%
Students showed more in-depth understanding of content	79%
Students learned more independently	84%
Students took more responsibility for their own learning	85%
Students demonstrated greater critical thinking and construction of ideas	80%
Students demonstrated greater creativity than in previous comparable assignments	84%

Extending the impact across the school

Both the qualitative and quantitative data provided strong evidence that many of the 'new teachers' were also influencing the attitudes and actions of the teachers and leaders in their schools through their use and promotion of the Intel Teach approaches.

Figure 6: Influence of New Teachers within their schools

True or somewhat true	Indicators of 'new teacher' influence within the school
72% (47% somewhat)	Shared their learnings from the Essentials Course with other teachers
49% (36% somewhat)	Had their unit plan implemented by other teachers in their school.
72% (54% somewhat)	Influenced other teachers to integrate technology into their teaching practice
58% (42% somewhat)	Worked with other teachers to develop and implement new technology based units
64% (45% somewhat)	Influenced the school to become involved in the Intel Teach Essentials Course
80% (50% somewhat)	Have seen an increase in the extent to which there is whole school support and commitment to the integration of technology based learning.

3 FACTORS INFLUENCING THE IMPACT

There is increasing recognition across all countries of the need for teaching practices that equip their students for the 21st century. The Intel Teach Essentials Course is increasingly being seen as a catalyst for significant change in teaching practice, particularly in countries with more traditional teaching practices.

The three year evaluation has highlighted the diversity between Teacher Education Institutions across and within countries and the consequent need for flexibility in implementing the Essentials Course. However, the 2007 Phase in particular has drawn out some of the overarching factors and practices that increase interest in the program, enable more effective implementation and lead to more positive outcomes for all involved.

A Partnership Approach

The development of partnerships between Intel, Ministries of Education, other pre-service governing bodies, Teacher Education Institutions and schools has been instrumental in initiating and sustaining programs across the countries:

Relationships established between Intel and key governing bodies that influence the pre-service education sector have raised the profile of the Intel Teach Essentials Course, generated broader interest and support and in some countries led to its robust adoption, particularly where it is a directive within the pre-service sector.

These relationships have been established and enhanced through:

- Forums and meetings which include key decision makers, to share relevant information and expand ideas, knowledge and awareness of what is possible.
- Localising the program for their particular country context.
- Accessing global and local evidence of the program's success, particularly through evaluation data.
- Highlighting and linking key decision makers to the global community of learners involved in the program and where possible involving them in global forums.
- Demonstrating the advantages of an alignment between in-service and pre-service, particularly where there is an effective in-service program in place.
- Providing global and local evidence of Intel's commitment to ongoing updating of materials, associated training and information provision and capacity to deliver on what is promised.
- Exploring ways to position the course so that it is most likely to address specific needs and priorities of the governing body (for example, a need to introduce Project Based Learning into the pre-service curriculum).
- Signing an MOU to formalise the arrangement.

The approval and involvement of these governing organisations adds a status to the program which helps to raise the Teacher Education Institutions' regard for the program.

Gaining initial support and commitment from leaders within the Teacher Education Institutions is vital, given their influence over funding, technology resourcing, curriculum directions and overall decision making. It has led to strong commitment and support regarding, for example, resources and timetabling.

Much of what is required for the establishment of the relationship with pre-service governing bodies is also required for the leadership team in the TEIs. This involves:

- Conducting forums/meetings, to inform leaders, demonstrate the global reach and influence of the program and provide evidence of success.
- Demonstrating Intel's capacity and support in implementing a program that addresses the needs of the institution and commitment to ongoing support, updating of materials, and associated training, particularly where the program is being mandated at a higher level.
- Highlighting the advantages of an alignment between the in-service and pre-service sectors.

Leadership approval and support for the program also influences how the Heads of Departments, Teacher Educators and administrative staff regarded the program and the extent to which they are committed to ensuring its smooth and successful implementation.

Targeting Leading Teacher Education Institutions as early adopters of the program increases the likelihood of high quality implementation. It also:

- Instils more confidence in the other Teacher Education Institutions exploring the option of involvement.
- Raises the status of the program, increasing interest and commitment.
- Sets benchmarks for success.

- Opens opportunities to draw on their ideas, experience and success by involving them in forum presentations, Intel Teach reference groups (or related Technology in Education committees) and networking activities.

Establishing and supporting a team of Intel facilitators within the Teacher Education Institution has lifted the profile of the Essentials Course within the institution and provide planning, coordination and a joint approach to its ongoing growth and improvement. Developing and maintaining commitment from the Teacher Educators requires support, planning, time, adequate resources, opportunities for enhancement through training, collaboration with colleagues and access to the decision makers.

A range of strategies have been put in place to support and increase Teacher Educator efficacy, for example:

- Establishing an Intel management group or committee to oversee and promote the program.
- Appointing an Intel Coordinator, to provide a central contact liaison person between management, the Teacher Educators and Intel personnel.
- Developing implementation plans in the establishment phase to guide staffing, timetabling and resourcing.
- Signing Memorandums of Understanding.
- Generating opportunities for collaboration between the Teacher Educators implementing the program across the Teacher Education Institution
- Including Teacher Educators from a range of ages and levels to elicit broad change across the institution.
- Continuing to increase the number of faculty trained through the 'train the trainer' model to increase opportunities for pre-service teachers to discuss the approaches and see them modelled across classes.

Relationships between in-service and pre-service teachers, initiated through the Essentials Course have:

- Increased opportunities during the practicum for Pre-service teachers to observe and practice the approaches promoted through the program and possibly implement their unit plans.
- Generated common approaches and a common language around the development and delivery of a curriculum that increases the focus on project based, student centred learning in schools and Teacher Education Institutions.
- Enabled smoother transition of pre-service teachers, when they graduate and commence in new teaching positions, due to the alignment of teaching practices.
- Increased employment opportunities, as schools see the value of the Pre-service teachers who have undertaken the program.
- Led to the development of learning communities across a broader education spectrum.

Models of Implementation

Implementation of the Essentials Course varied greatly due to the diversity around, for example, governance structures within the institutions, length and nature of the teacher education qualifications, location, and resource levels. While not compromising the integrity of the program, flexibility is required when positioning the Intel Teach program within the pre-service course.

Across the Teacher Education Institutions studied there were three broad categories of delivery

- providing a standalone program,
- integrating the program in a specific course unit or
- embedding various parts of the program in different units and in some cases across different years of the qualification.

Based on the approach chosen, decisions are then required in regard to the learning area/s in which the program will sit, when it will be delivered, the time allocated to delivery, the modules to be included, whether it will be a compulsory or elective option and the level of assessment and credit involved.

Overall, the study has shown that, for optimum impact, successful positioning of the Essentials Course is dependent on the extent to which:

- It is conducted in keeping with the aims and intent of the course - a focus on integration of technology into the curriculum (rather than the development of computer skills), a project based learning approach, and development of a unit plan.
- those participating gain a full understanding of the approach and the capacity and encouragement to apply it in a range of curriculum contexts.
- It is closely aligned to the full program in terms of number of modules delivered and hours of delivery.
- a sizable proportion of teacher educators undertake the training and development to ensure that, even though the Essentials Course is not formally being taught in all pre-service learning areas, there is a common approach being modeled and elements of the program are more readily referenced and promoted across many components of the course.

Development of formal implementation plans in collaboration with Intel, and in some cases the pre-service governing body, encourages the Teacher Education Institutions to focus on their needs and how they can most effectively meet them while ensuring the integrity of the program is maintained.

The level of technology infrastructure and connectivity available (at a country and an Institution level) has a strong influence on the way in which and extent to which the Intel Teach program can be delivered effectively. A range of effective practices were put in place to address the technology resourcing needs in different countries. These included increasing technology budgets, rearranging timetables, conducting out of hours classes, splitting classes and engaging local community and business support.

Building on Success

The report highlights many examples of Teacher Education Institutions that were most successfully implementing the pre-service Intel Teach program. Their achievements could be attributed to many of the practices mentioned above. But where success was evident there were also strong indicators that the Teacher Education Institutions and often their governing bodies, were working together with Intel to build on this success, expand the possibilities, and ensure that the momentum was sustained. This included:

- Ongoing updating and localising of the program to ensure it addressed their needs and contexts.
- Evaluating to inform ongoing improvement.
- Establishing technology in education networks to share ideas and practices.
- Promoting the program and its successes to bring others on board.

Conclusion

Overall, there is strong indication that, if underpinned by the various models of best practice that have been highlighted through the 2007 evaluation, implementing the Intel Teach Program Essentials Course in the pre-service sector will increase the program's sustainability and scalability and therefore its potential to significantly address the need for 21st century teaching and learning in schools.