Disseminating Educational Technology Research for Practice in Malaysia

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ABSTRACT

Educational technology and concurrently information technology have been developed atœvarying pace and excell ence in Malaysia overœthe last ten years. Substantive fundings have gone into resource centres, Teachers'Activities Centres, State Educational Resource Centres and Computers in Education Projects. The bulk of the research on any of these entities still remain with the Universities either as individual post-graduate efforts orœas fullÑfledged research projects ofœuniversity staff through external fundings. œIn the last fi ve years most of theseœindividual efforts have focussed on three mainœar eas i.e., Computers-in-Education,œEducational Resource Management, andœInstructional Design; and most of the groupœefforts are in Resource C entres studies, MediaœInventory, and Programme Evaluations. Theseœefforts, while salutory, needed more co-ordination for their results to be disseminated. While localized distributionœnetworks are available, there is a need for aœcentral clearing house for effectiveœdissemination espe cially with due regards toœspecific fields of interests. An informedœre search audience could bring about a sharperœresearch agenda focus and at the same timeœgenerating better understanding of theœnational and local needs. This paperœidentifies inherent problems associated with aœpolicy-sensitive research and attempts to findœways to make the findings available and toœpropose that much more of these researchœefforts be made av ailable to the practicingœteachers. It is contended that the presentœcentralized educational system could accommodate an across-the-board informationœdissemination set-up to enhance research andœpractice in this field.

Introduction

The dawning of the age of Information Technology has brought on a sense of liberation from the tried and tested traditional teaching learning i n classrooms. The remaining years of this millenium isœwell inundated w ith microprocessorÑbased control devices andœsystems and it seems a conv enient marriage of Information andœTechnology that led to the realizatio n of Information Technology. œIt was even proposed that with information more accessible and atœlow cost, it will increase opportunities for all with the greatestœgains being those presently disadvantaged educational ly. Or is it? œLet us not forget Stonier's (1980) terse statement "An e ducatedœwork force learns how to exploit new technology, an ingnorant on eœbecomes it victim".

The advent of Information Technology have of late been taken to be a further development of educational technology. Prac titioners andœresearchers should be aware of the differences between the two. œInformation Technology merely refers to the application ofœelectronics to garner and distribute information. It is moreœclosely associated to the term post-industrial society whereœinformation become a commod ity. Malaysia, being a developingœnation, will only be a net consumer of information, not a generatorœof information. However as Malaysian society joins the post-industrial age through satelite communication, inter-nets, CD-roms,œetc., the demand for Information Technology servic es in educationœwill inevitably increase.

Educational Technology in Malaysia

The uptake of educational technology in Malaysia follows closely that of the development of the field from its audio visual roots. It can a lso be said that educational technology adoption closelyœparallels that o f the development of the technology for delivery ofœinformation, viz. wh en the gramophone is replaced by the audioœcassette player, so does the e quipment change be observed inœschools. Concurrently as the sophisticat ion of the field getœintense there was a need to review the educational t echnologyœcurriculum for teacher preparation. We can see a few clearœlandmarks in the studying of educational technology. For exampleœthe early 1970's saw the end of of AV education in teacherœpreparation programmes in colleges and universities. EducationalœTechnology becomes a required course in all teacher preparationœcurriculum. Similarly the late 1980's saw the introduction ofœ"computer-in-education" courses as an elective and subsequently aœrequired course in teacher-preparation programmes. The parallelœbetween the advent of the technology and the development of courses and facilities are thus nearly always synchronous.

Hence we can trace educational technology development by these technologies as they com e into the market place. Table 1 encapsulate the development of facilities/programmes/support systems in relation to educational technology development in Malaysia. Clearly the fifty so years of educational technol ogyœdevelopment did show that things are coming at the right pace and educational technology had become entrenched in schools.

Table 1: Development and Adoption of Educational Technology in Malaysia

Year	Milestones
1940's	Adoption and use of AVA's (e.g. flip charts, flash cards, models in schools)
1956	Educational Radio Broadcasts to Malaya and Singapore and distribution of flip charts, AVA kits to schools
1965	Educational TV Pilot project
1967	Setting up of the National Audio Visual Aids Centre (NAVC) in the Ministry of Education
1970	Setting up of the Educational Media Service Division (EMS) replacing the NAVC
1974	Setting of the Educational Technology Unit at University level in Universiti Sains Malaysia
1981	Educational Technology course becomes a required course in all Teacher TrainingœColleges
	School computer clubs make their appearance
1980-1984	Setting up of Educational Technology Unit in all State Education Departments, and in 4 states (namely Kedah, Terengganu, Kelantan and Pahang) State Educational Resource Centres were established
1986-1990	350 District Educational Resource Centres were set up to serve surrounding primary and secondary schools
1988	The reorganization of the Educational Media Service that includes the Library Services to

become the Educational Technology Division of the Ministry of Education.

1990 District Educational Resource Centre become the Teacher Activities Centres.

The fundings to set-up and maintain these services are substantial given the diverse localities and in many instance requiring new buildings. As an indicator of the expenses, for period 1986-1990, *RM5.1 million was spent on Audio visual materials sent to School Resource Centres and Teacher Activities Centres. In addition bookœsupplies to schools cos t RM41.5 million. For the period 1990-1995 another RM35 million will be allocated to build 95 School Resource Centres, and 200 Teacher Activities Centre.

According to the former Director-General of Education, all these expenses will go to waste if no gains come about from these investments. Asiah Abu Samah (1990) contends that more effective and concrete efforts need to be instituted to encourage pupil-centred learnin g based upon resources and oriented towards the individual and group. I t must be emphasized that implementation of curriculum and assimulation o f educational technology should be integrated and supportive of each oth er. Because of the importance of adoption of educational technology thr ough effective use of the State Educational Resource Centres, Technology Activities Centre and School Resource Centres, the Division of Educatio nal Technologyœof the Ministry of Education plays a critical role to gui de andœmake it a reality educational technology culture (or enculturatio n)œand knowledge culture amongst teachers and pupils. (p. 4)

The Ministry of Education had thrown down the gauntlet for all whoœcare about impr oving education to see to it that educational technology supports do not go to waste and the Ministry needs evidences of its efficacies.

* Note AUD$1.00 = RM1.95

Research Activities on Educational Technology

The mandate of the Ministry of Education with regards to educational technology seems clearcut, i.e., to show proof of itsœefficacy and justif y the expenditure. This does not mean thatœeducators are unÑconcerned a bout the role of educational technologyœprior to that. In fact most stu dies prior to 1990 actually areœfocussed on educational technology's con tributions to attainment orœachievement or to its utility. The past fif ty years of educationalœtechnology development are usually accompanied b y supportingœresearch work. With media application

in the classroom thi s willœgenerate sufficient "pull" amongst researchers to look into itsœu tility. Most of these in the mid 1960's to 1970's are individualœeffort s or in conjunction with implementation programmes with theœsponsoring a gencies. (e.g. in tryout of use of video cassetteœrecorders, solar panel s for ETV viewing etc.). The orientations inœeducational technology cha nge with the state of development andœthere is a decided division of res earch concerns based uponœinstitutional or individual needs and expertis e. Table 2 gives anœapproximate indication of the type of institutional studies. œExcept for the doctoral research all other institutional rese archesœare conducted by academicians from the local universities withœgr ants or support for the Ministry of Education. The last setœrepresent a series of onÑgoing studies/research on utilizationœmodes of the media s ervices provided through the Division ofœEducational Technology. These a re the Educational Radio,œEducational TV and AVA kits plus a number of one-off projects launched from time to time.

These "institutional" studi es are characterized by the breadth ofœstudy that takes into account nat ionÑwide or stateÑwide concerns orœneeds. They are mostly conducted wit h outside fundings or as aœrequirement of the funding to the project; in other words as anœevaluation exercise on the implementation of the proj ect. œPrimarily the concern here is that of whether initial objectivesœa nd planning of the project had ensured the emplacement of theœproject or facilities and that with the facilities in place had theœutility rate b een up to the planned goals. Hence there are twoœcategories of study; t he first being that of implementation andœlaunching of project or progra mmes, the second being the status andœutilization of these project or pr ogrammes; i.e. their functionalœroles. The first five studies cited in T able 2 belong to thisœcategory as they primarily document the developmen t and subsequentœstatus of these projects or programme. The next five s tudies inœTable 2 are more concerned with the status of the projects in t ermsœof their physical adequacy, manÑpower and operations variables as –well as the utility value of these projects or programme. Theseœcoul d also be seen as summative evaluative type of studies in thatœthey are c arried out after the projects or programmes have been inœexistence for a certain period of time or have "matured". The lastœcited studies are "in-house" conducted by the officer of the

Table 2: Instructional Research Areas of Concern in Educational Technology

Areas	Research Conducted by	Year

Division of Educational Technology itself and appear to be on-goingœmonitoring of the Division's programmes.

The purposes of these stu dies are not many. Their utility value isœthat of decision making by th e authorities as to the

operationsœstatus of the Ministry of Education's many "agencies" (see Chart 1œAppendix) that play major roles in the dev elopment of educationalœtechnology in Malaysia.

The main features of th ese "institutional" type of research is thatœof width of study in geogra phical locations and coverage of allœestablishments involved in the prog ramme or facility. This willœgive a group norm of the establishments so as to allow for decisionœof what to do with these establishments. Some decisions may be theœre-alignment of objectives, re-structuring of admi nistrativeœprocedures or confirmatory to on-going projects to expand the seœestablishments. This is clearly seen in the study on theœOrganizing a nd Management of the State Education Resource Centres. œThe last study c ited in the Table 2 has more to do with monitoringœand feedback to progr amme source (the originator of the programmes)œas to the utility of the s ervices. These all point to anœevaluative decision-making approach to r esearch is educationalœtechnology.

A second group of research efforts in educational technologyœinvolve individual or small group efforts and a re mostly "academic"œin nature and accrue towards earning an advanced or postÑgraduateœdegree in the local universities. These studies are char acterizedœby their variety of areas of concerns, localized in nature and œtended to be structured or a hypothesis-testing mode or in someœform of inquiry discourse. The researchers are usually post-graduate stu dents, most of whom are practicing teachers or StateœEducation Resource C entre officers, and some are university/collegeœstaff upgrading their qu alifications. The range of research areaœis wide and encomposes the cur rent trends of research comparable toœother countries. Table 3 illustra tes generally the areas ofœinterest studied and most of the researchers c ited here are doingœpostÑgraduate studies attached to three of the seven localœuniversities; being Universiti Sains Malaysia, University of Mala yaœand Universiti Kebangsaan Malaysia. There are also research doneœin t he other local universities but their output is not at the sameœlevel of the first three universities cited here.

What is clear is that there i s a definite gravitation towardsœstudies about computers in education an d factors influencing mediaœusage. These two account for a combined tot al in excess of 60% ofœthe crop of studies conducted at post-graduate level. (Some of these studies are described in more specificity in Yusup,œH. [1994]).

Table 3: Individual Research Areas of Concern

The studies conducted on media usage tend to be more concernedœa bout attitudes of users and the availability of media or expertiseœat th e location of study. Among some of these studies areœrelationship of "t raining programmes" to eventual use of media inœschools. What is notabl e is that almost all the studies willœindicate a positive attitude of us ers towards media, insufficientœtraining about media use, poor equipment /space/facilities for mediaœuse, and relatively poor impression about th e potential of theœresource centres. These came about from "attitude" m easures andœthen some of the studies tried to link these attitude measur es toœ"low utility rates" of media. These studies, while a usefulœacade mic exercie, do not give much indication or solution to theœextant probl em at stake; i.e., the

relatively low impact of media in education, and the seeming inability to raise utilization rateœby w hatever means. Hence compared to the "institutional" type ofœstudies no t much "decision-making" could be attached to theseœefforts by the event ual authorities.

The same may be true of the group studying computers-in-education. œAs this is a developing field there is bound to be interes t in thisœarea. Also as this field has yet to be clearly defined andœde marcated as seen in onÑgoing studies overseas and the wideœvariety of re search journals about this field, it is inevitableœthat there is no clea r focus of interest but more of linking otherœareas of study to be latch ed on to the computer. For example, itœis obvious that those who are co mputerÑliterate (as measured by theœMCLAA questionnaire) would undoubted ly be more competent andœconfident about computers. Similarly a novelty effect could not beœdiscounted in oneÑshot experimentation of effective ness ofœcomputerÑbased instruction. Amongst the studies are those on pr e-packaged programmes, word-processing packages, drill-and-practic eœmodes; and these do not differ from studies in other countries. Ofœmo re interest will be those that can "make-or-break" a particularœperspect ive or point of view. This being the more `basic' studiesœof linking co gnitive strategies to learning through computerœpresentation or manipula tion; or determining the InstructionalœDesign variables that can ultimat ely bring about better learningœprogrammes through the computer, or thos e that exploit theœpotentiality of the microprossessor rather than using theœmicroprocessor to carry out function other media had hitherto done.

A third group of studies is better classified as that of policy-l

inked studies conducted mainly by Ministry of Education officials expeci ally those within the Educational Planning and ResearchœDivision. These studies are usually conducted at different localesœwith specific missio n objectives. For example, are rural schoolsœgoing to improve with addi tional educational technology support?

Or these may be studies on media /resource management and howœguidelines can be devised to optimize media use. A peculiar traitœof these types of studies are the limited availa bility ofœinformation about them. School teachers and administrators ma yœfeel the impact or results of these studies via a different mode ofœin formation. This being the distributing of "ministry circulars"œor `what to do' about certain aspects of school/classroomœadministration or in t erms of differential allocation of fundingsœfor resource acquisition. H ence the ultimate user of theœinformation from these studies are not awa re of the bases leadingœto these decisions.

A fourth and looser groupin g of research efforts are those relatedœto coursework requirements of co llege or university based teacherœtrainees. These usually are short-term research assignments withœspecific questions/problems addressed and sp ecific answers sought. These are usually of an evaluation type of studies on programmes,œres ources and utilization as well as perceptions and some are moreœexperimental in approach to test assumptions about certainœvariables that are manipulated.

Generally these "reports" are localized and not properly catalogued or documented.

Some perspectives of educational technology research in Malaysia

It is clear that there are at least two perspectives for Research in educational technology here. The research conducted on a national leve l tended to be that of `evaluation studies' or `frequency scores' of ser vices, equipment etc. These are usually of an applied perspective with a view to make decisions about certain facilities or programmes. The res earch conducted by inviduals, usually towards acquisition of an advanced degree, tend to test theories or hypothesis about certain assumptions underlying a practice. While these are not truely attempts to break new g rounds on instructional or learning theories, they neverthelessœcontribu te towards supporting or rejecting existing theories aboutœnotions of le arning from an educational technology perspective, andœthese studies may have some applied perspectives with reference to local needs and considerations.

Malaysia and many other developing nations have not joined the

divergent modes of research in educational technology as exemplified by Western industrialised nations. Ross, Sullivan and Tennnyson (1992) discussed the polarization of research and application so dominant in thi s developing field of educational technology i.e. that on the study of m edia delivery system and that of learning theories development.

Perhaps we are more fortunate is not compartmentalising the two andœactually do both simultaneously so that theory and practice couldœbe synchoronous. T hus as new technologies emerge, the pragmatismœin our researchers will c hannel our efforts towards realization ofœeducational technology potenti als than be lured by the glamour ofœthe technology. Of course the cynic s will say that developingœnations do not have the luxury of theorizing!

It does not matter though as rational
demands are given priority soœth at an effective educational system could be developed and also itœhas be en proven time and again Malaysian (as well as other EastœAsian) childre n fair much better in standardized examinations thatœmeasure academic ex cellence.

Any developing ecomony with a government-sponsored educationa l system will inevitably subscribe to a "top-down" approach in education al implementation and strategies. The administrative routines and where fores are spelt out in "general orders" and occasional "circulars" that prescribe functions and responsibilities of organizations. Thus any research conducted will have to take cognisance of such bureacratic procedures and functions. Similarly properly san ctioned studies also demands that results of the study be deposited with the central authorizing body i.e. the Educational Planning and Research Division of the Ministry of Education at Kuala Lumpur. This "arrangeme nt" is the very one that had caused researchers much concern as what is " deposited" seldom re-appear to be shared amongst researchers for a better understanding of educational technology development. Many had in fact classified the procedures as leading to a "black hole".

Lacunae in Educational Technology Research

What is clear is that research in this area as well as many other areas are done by third parties and reports forwarded to sponsoring partie s for action. This is the typical paradigm for

research. There is a de arth of "own" research in a sense of the teacher-practitioner rese arching on his own system of instruction or exploring ways to improve on Ñgoing programmes. Teacher action research is currently encouraged in M alaysia. In fact the State

Education Departments have funds available f or such practices. To date there is a few takers much less even a very s pecific areas of interests. Is this a continuing effect of a top-down a dministrative structure or is it a sign of apathy amongst teachers?

Perhaps another reason, apart from red tape and clearances despite the fun dings, would be that of a lack of avenues to disseminate the findings. T his is true for all areas of education as there is generally too little n umbers of research journals or journal published on a regular basis.

Disseminating Research Findings

Of the seven local universities only five have fulfledged education p rogrammes and of these only two publish educational journals. Being univ ersity-based journals, these tended to be "academic" or "scholarly" and h ence restrict participation or fail to attract "call for papers" request s especially from outside the universityœcommunity. Then there is the q uestion of circulation. Most ofœthese journals of education (trying to b e regular in publicationœschedule) are circulated amongst "academics" an d few reach theœschools-level. The poor appeal is not that these journa ls areœcostly (in fact they are quite cheap) but that their contents ten d to be academic and beyond the grasps of layman.

Similarly another `quite' regular journal (the Jurnal Pendidikan) is one sponsored by the Min istry of Education. This has a wider distribution through the State Edu cation Departments to all schools and colleges. Their contents are more "valid" to schools as they discuss policies and issues affecting or rel ating to schools and teachers. However this journal do not seem to carry much research reporting.

Amongst academics there are `informal' networks and occasional conventions/conference where they get together to exchange ideas and al so to be updated about each other institution's forays into research. H ence this informal network do allow for a clearer understanding of the t hrusts in research. This however is ineffectual and there is a need for a more formalized clearing house and dissemination system especially wi th regards to specific field of interests.

The educational technologist s and all others who subscribe to this areas of interest have their own M alaysian Educational Technology Association which conducts an annual con ference each year with theœsupport of the local state education departme nt or agency. Arisingœfrom these conference may be a publication of pro ceedings of theœconference. The association had attempted to

publish a j ournal butœto date its regularity is questionable. This association do h aveœa good mix of academics, administrators, teachers and practitionersœa nd being young needs much effort to flex its muscles.

Another group that "disseminates" information is that called the Southeast Asia Research R eview and Advisory Group (SEARRAG) which consist of a few individuals re presenting the countries in the

region and are mainly involved with incr easing and reviewing the contributions of research results to educationa l policy and practice. As it is, its a more a "closed community" of the same faces over the years. Its contribution is thus limited as it atte nds to a few and those in the policy making process. All other academic are only involved in contributing (when invited) to the "review" of pra ctices and "state of the art" of various themes. Those that are in the " fold" will get a deeper understanding of the issues discussed within the grouping. What is missing is the sharing of information with real prac tising teachers and academics by the soÑcalled "local" SEARRAG represent ative. This tight knitted grouping do not do well to serve the needs and aspirations of researchers and practitioners. This is embarassingly so if it actually becomes a grouping of "back slapping schoolmates" (seeœS EARRAG Bulletin, 1991).

Thus while localized distribution networks ar e available, these are inadequate and disjointed and this calls for an e ffective central clearing-house for dissemination.

Educational Research Information System (ERIS)

The impetus towards research and research focus could come about wit h a better coordination and dissemination of information relating to res earch and policy. This is especially so if all practicing teachers and r esearchers are aware of on-going and completed research whether conducte d by institutions, groups of researchers or individuals. The aforesaid dilemas and missingœpieces in the jig-saw of research agenda could be ameliorated with concerted e fforts to raise the level of awareness and interests as well as "underst anding" of the current researches on-going among practitioners, policy m akers and academics. Existing disparate efforts will not in anyway help to consolidate and energize the research community. There is a need for the will and wherefore to debunk the present status quo of isolated ef forts and this can possibly be achieved through the existing educational system structure.

The Educational Planning and Research Division (EPRD) of the Ministry of Education being the central authorising body for sc

rutinising and approving of research requests involving education (mainl y schools) and the depository of all research reports of the research ap plication it approves could well be the most legitimate body to organize a clearing-house or an Educational Research Information System (ERIS). A part from scrutinizing applications for educational research from all an d sundry the EPRD also acts as a conduit for Institution level research i nvolving the Ministry of Education and a third party plus a funding agen cy (e.g. World Bank). So the EPRD is quite aware of what's going on in r esearch in education. Also as a depository of research reports it may w ell have the capacity to extract information from those researches to di sseminate them. This way it will avoid the `black-hole' alluded to its o perations by researchers who find it extremely difficult to get access t o those reports. One type of research/evaluation reports that are usual ly unavailable to the lay public and also serious researchers are those t hat have policy implications of the government. And these may well be a n off-shoot of some sanctioned researches that in most cases are never m entioned or referred to in policy circulars. As practitioners it is not unsurprising that policy circulars become more and more divorced from t he practitioners' perceptions of the bases of these

circulars. Perhaps i t is time that some form of review or abstracts could be culled by the E PRD officers to define the parameters on which such policies come about. This does not need a full revelation of the policy sensitive matters i nvolved in those studies. Only when the origins of such decisions are i dentified could follow-up researches be made, for if not many researcher s will only be duplicating or recycling similar researches over and over again.

The EPRD has the right linkages, political patronage (and being an appraising agency) the clout to see to it that its depository role i s now complemented with a disseminating role. For a start the abstract o f researchers that it has collected could become the piece-de-resistance section in the "quite regular" Ministry of Education's Journal Pendidik an (Educational Journal). That way lay readers will also be aware of re searchers carried out in Malaysia.

Fall-out from ERIS

A wider polulace aware of the place of research will be realized. In s o doing more practitioner will also be encourage to embark on research i n their practices. With the knowledge of on-going research being dissem inated a likely step forward will be an orchestrated effort to refine an d improve research focuss so that less duplication will occur and more i mportantnly, more objective

research will be conducted instead of the us ual churning out of concept/ideas papers. The work ahead is monumenta l and should not be the sole prerogative of individuals or small groups, but that of a commited and supportive centralized system already in exi stence.

Conclusion

At the moment, the author do not see a critical mass demanding a more effective disseminating system on research in education in general. Ho wever it does not discard the existence of this vacuum. Generally speak ing, if such a service is not there, it is not felt! In other words if s uch a wide ranging dissemination of research could be mounted, such as a proposed ERIS, then the need for it will be felt. It is like dishing o ut the "goodies" then will the recepients taste what had been missing. T his is in contrast to traditional ideas towards innovations, if research dissemination could be considered as one. Traditional need for immanen t change (see Rogers and Shoemaker, 1971) where members (researchers her e) identify their own needs and develop a dissemination to serve their n eeds and develop a dissemination to serve their needs. Or it could be a n induced immanet change where outside sources "impose" a need and desig n a system of dissemination to serve the need.

The creation of an across-the-board information dissemination set up to enhance research and pra ctice in this field could thus be more closely aligned to that of an ind uced immanent change for the simple reason that a top-down centralized e ducational system could make that happen than that of hoping from a gras sÑnot level type of demands which normally become diffused and ineffectu al as it rises the steps of a central system.

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