Looking in the future of ICT in education in Vietnam
Report on a Panel Survey of 2012

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1. Introduction

In periods of personal distress, or at turning points in life, many Vietnamese consult a fortune teller. Often it is not much more than a social activity with a group of friends to release some stress. Related to Information and Communication Technology (ICT) in education in Vietnam, a turning point seems to be around the corner as well. For over a decade, an extended body of guidelines and policies has been put in place, addressing several aspects of integration of ICT in education (Peeraer & Van Petegem, 2011). Starting from 2000, ICT has been placed on the education reform agenda both as an object of education as well as an important pedagogical tool for innovating teaching methodology. Furthermore, impressive progress on improving access to ICT has been made in Vietnam, as is shown in the ICT Development Index (International Telecommunication Union, 2009, 2011). In a recent report of the South-East Asia Ministers of Education Organization (SEAMEO, 2010) is stated that the policy guidelines and ICT infrastructure and resources in schools in Vietnam may have provided the necessary and sufficient conditions for some schools to transform their ICT-mediated teaching and learning practices. Nevertheless, it is clear that, as in other countries, no educational revolution is taking place yet. Research has been carried out worldwide on factors influencing or constraining the use of ICT in education and these factors have been addressed in ways to create a breakthrough (e.g. Drent & Meelissen, 2008; Groff & Mouza, 2008; Mumtaz, 2000). At the same time, critical voices are raised with regards to the whole discourse of integration of ICT in education (e.g. Bigum & Rowan, 2008; Kirkup & Kirkwood, 2005; Selwyn, 2007). The question for Vietnam is now what to aim for and how to move ahead.

We believe that a look in the future might put current achievements in perspective. As argued by Williams (2005), extrapolations from emergent trends can have a value in promoting understanding of the present situation as well in as identifying needs for the future. It is clear, as argued by Selwyn (2012), that technology is certainly not an uncontested or uncontroversial area of education and many of the issues that surround education and technology are the fundamentally political questions that are always asked of education and society – i.e. questions of what education is, and questions of what education should be. Instead of putting our fate in the hands of a fortune teller however, we brought together a selected group of key players in the field and facilitated a reflection process on targets and priorities related to ICT in education in Vietnam for 2020. We did this by following the Delphi method where in different survey rounds key players assessed the current situation of ICT in education, identified a series of targets and priorities for the future and were asked to assess these targets on their importance.

In this report we start with a clarification of the research objectives. Afterwards we describe in detail the Delphi method and how we applied the method for this panel study. For each round of
the panel study we present the major findings, after which we draw conclusions and discuss on how to move ahead with ICT in education in Vietnam.

2. Research objectives

The aim of this panel study was to facilitate dialogue and cooperation on a wide range of operational components of ICT in education and transformation of education. To initiate this dialogue, key players have been identified and invited to share their opinion on the current status of ICT in education in Vietnam as well as to identify targets and priorities for 2020. To make sure all factors that relate to ICT in education were addressed, the holistic framework of ICT in education, identified by Southeast Asian Ministers of Education Organization (SEAMEO, 2010) was introduced to the key players. In a report on the status of ICT in education in Southeast Asian countries, SEAMEO identified ten ICT in education dimensions based on the country case studies where these dimensions are necessary and sufficient conditions that support the integration of ICT in education (see table 2). In order to make sense of the differences and commonalities among the countries, regions and areas, SEAMEO applied the four stages of ICT in education from UNESCO’s model of ICT Development in Education (UNESCO, 2005).

The research objectives that are intertwined with this panel study are twofold:

- to identify targets and priorities of a group of key players in the broad field of ICT in education in Vietnam on targets and priorities for 2020;
- to measure the consensus amongst these key players on the importance of these identified targets and priorities for 2020;

Through identification of the targets and priorities and assessment of consensus on importance, the study aims in addition to explore and analyze the underlying mindset of the group of key players related to the future of education in Vietnam and the role of ICT therein.

3. Research methodology

To facilitate the dialogue and to identify targets and priorities and achieve consensus, we have applied the Delphi technique. The Delphi technique is an anonymous multi-round surveying technique for gathering and synthesizing experts’ and stakeholders’ judgments and opinions on matters relating to complex policy considerations. The technique is a method for structuring a group communication process so that the process is effective in allowing a group of individuals, as a whole, to deal with a complex problem (Linstone & Turoff, 2002).

For this study, the technique is used for analyzing needs for educational policy and development in the field of ICT in education to develop a full range of alternatives and explore underlying assumptions. Furthermore, the Delphi technique is used as a method for consensus-building by using a series of questionnaires delivered using multiple iterations to collect data from a panel of selected subjects.
3.1. Delphi rounds

In a Delphi exercise, the purpose of the survey is to structure communication among survey participants (Linstone & Turoff, 2002). Even though there has been considerable variance in administrating the Delphi process, prescribed methodology requires that two cycles of questionnaires and feedback reports be used (Van de Ven & Delbecq, 1974 in (Pollard & Pollard, 2004)). Three iterations are often sufficient to collect the needed information and to reach a consensus in most cases (Cyphert and Gant in Hsu & Sandford, 2007). For this study, a three-round Delphi process involving three cycles of online questionnaires and feedback reports has been organized (see table 1).

Afterward an initial key players meeting where the framework of ten dimensions of ICT in education (SEAMEO, 2010) was introduced , the same key players have been invited to participate in the first survey round. With an e-mail invitation they were directed to the online Delphi survey and asked to share their opinion on the current status of ICT in education in Vietnam as well as to identify targets and priorities for 2020 on each of the ten dimensions. The online survey was completed by 20 key players out of 34 invited and confirmed participants for the meeting. Their input led to an assessment of the current status of ICT in education in Vietnam and a list of targets and priorities for 2020 addressing ten dimensions of ICT in education. Identified targets and priorities were then reviewed by the researchers and consolidated to eliminate duplication. The targets and priorities were categorized according to the dimension and sub-dimension they addressed and used to develop the survey for the second Delphi round. The findings have been shared with all key players in a feedback report.

For the second survey round, the same key players were invited, as well as other stakeholders that had been identified after the first key players’ meeting. In total, 26 respondents completed the second survey. These respondents were asked to assess each of the targets and priorities that were identified in the first survey round on their importance or possible impact in light of the current educational context in Vietnam. The targets and priorities have been rated on a scale from 1 (Unimportant) to 10 (Very important). Once returned, descriptive statistics (mean and standard deviation) for the group ratings were calculated and shared with all participants in a report as well as during a follow-up meeting of the first key players meeting. As suggested by Hsu and Sandford (2007), as a result of round two, areas of disagreement and agreement are identified (see next section on defining consensus and priority).

For the third and final round, all respondents were invited to re-rate the targets and priorities on which no consensus was achieved in the second survey round. As suggested by Rayens and Hahn (2000) items for which consensus has been achieved in the second round were no longer included in this stage. This time, descriptive quantitative as well as qualitative information about how the group responded, as a whole, was provided. In total 22 respondents out of 26 who had participated in the second survey round completed the third survey. The respondents were asked to review each item, consider the group response and then re-rate the items, taking that information into account; or to specify the reasons for remaining outside the consensus. The findings have been shared in this final report.
3.2. Defining consensus and importance

Crucial in a Delphi study is to define when the group has arrived at a consensus. Most studies use quantitative and statistical measures such as mean, median, mode, standard deviation, skewness index, interquartile range, and rank (Espinosa & Caro, 2011). Depending on the area of research, usually researchers define their own consensus criteria. In this study we use the standard deviation of the total response as a measurement for consensus. Standard deviation (SD) shows how much variation or “dispersion” exists from the average (mean value). A decrease in standard deviation indicates an increase in agreement (Hakim & Weinblatt, 1993). Related to the targets and priorities that were assessed in this study, we used a standard deviation of 2.00 as the cutting point for a consensus. With a ten-point answering scale with a range from 1 (Unimportant) to 10 (Very important) ICT targets and priorities with a standard deviation lower than 2.00 can be seen as items on which there is a consensus.

In this study we use the mean or average of the total response as a measurement for priority or importance. The respondents were asked to assess the dimensions as well as the targets and priorities on a scale from 1 to 10. To guide their ranking, the following descriptions were provided (see table 1):

<table>
<thead>
<tr>
<th>1 - Unimportant</th>
<th>No priority; no relevance; no measurable effect; should be dropped as an item to consider</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 - Slightly Important</td>
<td>Insignificantly relevant; third-order priority; has little importance; not a determining factor to major issue</td>
</tr>
<tr>
<td>7 - Important</td>
<td>Is relevant to the issue; second order priority; significant impact but only until other items are treated; does not have to be fully resolved</td>
</tr>
<tr>
<td>10 - Very Important</td>
<td>A most relevant point; first order priority; has direct bearing on major issues; must be resolved, dealt with, or treated</td>
</tr>
</tbody>
</table>

Targets and priorities that have a mean value of 8.00 or higher, are considered as most important and items with a mean value of 9.00 or higher are considered as crucial or very important. Items with a value from 7.00 through 7.99 are still important, but not most important. Items with a mean value below 7.00 are considered less important.

4. Findings

4.1. The key players group

Choosing the appropriate subjects directly relates to the quality of the results generated (Taylor & Judd in Hsu & Sandford, 2007). The participation list of the key players’ meeting has been compiled by the organizers of the first meeting and represents the broad network of actors in the field. From the 20 respondents who completed the initial Delphi survey, 25% indicated they are development partners while a bit more than half (55%) are from the public sector. The remaining 20% of respondents is from the private sector. Their occupations range from technology developer and service provider, to educational researcher, lecturer, trainer/tutor and school head,
university dean or head of department, to policy maker. This group of key players are involved in all dimensions of ICT in education identified by SEAMEO (2010). After the first key players meeting additional key players have been identified and invited for the second and third Delphi rounds.

4.2. Current status of ICT in education in Vietnam

In 2010, the SEAMEO (2010) identified Vietnam as a “group 2” country: these countries are mainly at the infusing stage for most of the dimensions and most of them already have developed ICT plans and policies in education (SEAMEO, 2010). According to the report, Vietnam has three dimensions of ICT in education in the transforming stage: national ICT in education plans and policies, complementary national ICT and education policies and ICT infrastructure and resources in schools; and these may have provided the necessary and sufficient conditions for some schools to transform their ICT-mediated teaching and learning practices. The SEAMEO report is based on case studies submitted in May 2009 by ICT in education policy makers from 11 SEAMEO countries. The overall picture that is drawn by the ICT in education key players that participated in the first Delphi round in the beginning of 2012 is somehow less optimistic. Most key players do not observe that plans and policies on ICT in education or infrastructure and resources are at the transforming stage. The mean score for “national ICT in education vision” is only 1.75 (on a scale from 1 (emerging) to 4 (transforming)). The key players observe a gap between different education levels: while, as observed by the key players, higher education institutions are mostly at the infusing stage for different dimensions, in secondary and especially primary education some dimensions are still in the applying and even emerging stage.

Table 2: Distribution of items (second survey round)

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Important</th>
<th>Most important</th>
<th>Very important</th>
<th>Total consensus</th>
<th>No consensus</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICT infrastructure and resources in schools (1)</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Teaching and learning pedagogies (2)</td>
<td>3</td>
<td>8</td>
<td>4</td>
<td>15</td>
<td>2</td>
</tr>
<tr>
<td>Professional development for teachers/school leaders (3)</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>ICT in the national curriculum (4)</td>
<td>3</td>
<td>2</td>
<td>0</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Community/partnerships (5)</td>
<td>4</td>
<td>3</td>
<td>0</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>Assessment (6)</td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Evaluation &amp; research (7)</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>National ICT in education vision (8)</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>National ICT in education policies &amp; plans (9)</td>
<td>0</td>
<td>6</td>
<td>0</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Complementary policies &amp; plans (10)</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>25</strong></td>
<td><strong>32</strong></td>
<td><strong>5</strong></td>
<td><strong>62</strong></td>
<td><strong>35</strong></td>
</tr>
</tbody>
</table>

After assessment of the current status, respondents were requested to list priorities or provide suggestions for realistic targets to achieve by 2020 related to the ten dimensions. These were open questions that led to a large amount of input from the respondents. After assessment of
overlap, 97 targets and priorities have been identified and these have been categorized in the ten dimensions and different sub-dimensions which reflect specific aspects of ICT in education. In the second survey round consensus has been achieved on the importance of 62 (63.9%) of these items (see overview in annex 1). Of these 62 items, 32 are on average perceived as most important (9.00 > Mean ≥ 8.00) and 5 have a mean score of 9.00 or higher (crucial or very important). The rest of these items (25) are still considered important (7.00 =< Mean < 8.00) (see table 2).

4.3. Achieved consensus on identified priorities on ICT in education in Vietnam for 2020

In what follows we give a description of the targets and priorities for which the key players agree that these are most important (32) or very important (5) in the second survey round (see annex 1). Related to “Infrastructure and resources” (dimension 1), the respondents agree that it is most important to target for a learning management system in all HE institutions, to have digital resources for teachers and students accessible via an online portal, and to aim for a reduced digital divide of ICT opportunities between poor rural schools and better-off urban schools. On average they agree it is very important to target for Wi-Fi internet access in all HE institutions. A lot of items (15) on which consensus on importance has been achieved in this survey round are related to “Teaching and learning pedagogies” (dimension 2). On average the respondents find it very important to promote cooperative learning and teamwork skills, critical thinking, research, problem solving and decision making skills, as well as self-study and self-improvement skills. In addition they find it most important to promote a learner centered approach with active participation of students, to promote experimental learning and extra-curricular activities for holistic development and to review the curriculum to allow more autonomy for teachers and students. Furthermore they find it most important to promote creativity and initiative, but also language skills and basic ICT skills and knowledge at lower grades. Finally they also find it most important to target to apply ICT for research and collaborative learning.

Also in the qualitative comments there is a clear consensus on the importance of targets and priorities related to the promotion of particular teaching and learning pedagogies, to promote 21st century knowledge and skills.

“It would be valuable if schools attempt to incorporate student-centered active learning within the curriculum. However, that can not be too drastic. An important starting point would be to allow teachers to have more autonomy in teaching.”

“The approach of learner-centered teaching with the active participation of learners is an important factor to educational reform. Currently this does not take place effectively in Vietnamese education. So it is really important and necessary to address and promote it more substantively and more properly.”

The panel members are also in consensus on the importance of ICT knowledge and skills to be addressed in “Professional development for teachers and school leaders” (dimension 3). They agree for example that basic ICT knowledge and skill training for teachers and managers is most important, as well as subject specific ICT training for teachers, and training on ICT for active teaching and learning. There is agreement on the importance to target for use of ICT to deliver the national curriculum (dimension 4) by promotion of e-learning and blended learning, and to promote cooperation (local and international) on ICT in education with the participation of the public and private
sector and (overseas) development assistance, as well as to target for use of ICT to support
community participation in education (dimension 5). Few items on which consensus has been
achieved are related to “Assessment” (dimension 6) and “Evaluation & research” (dimension
7), even though most respondents agree that it is most important to promote research as a basis
for proper policy formulation on ICT in education.

On average, respondents are in consensus that it is most important to target for a national vision
(dimension 8) that focuses on education and learning and a vision that is holistic, taking into
consideration different factors of quality of education. There is moreover consensus on the
importance of six items related to “National ICT in education policies & plans” (dimension 9)
as well as on three items related to “Complementary policies and plans” (dimension 10),
indicating a strong belief in the importance of planning and policy development in general. Most
respondents find it most important for example that a national policy and plan on ICT in education is
in line with the national visions on ICT in education and that it is accompanied by a specific financial
plan. They find it important also that teacher professional development is included in these plans, and that
these plans are comprehensive and cohesive and assist all stakeholders in implementation. Finally panel
members also agreed that policies and plans should be developed with involvement of all
teachers, students and other stakeholders.

4.4. Controversial targets and priorities

In the second survey round, no consensus has been achieved on 35 items (see table 2). However,
in the third and final round of the panel study, the respondents could re-evaluate the importance
of these targets and priorities. At that point, consensus has been achieved on 29 of the items (see
annex 2). Nevertheless it is clear, as also seen in the related qualitative comments, that these
items address more controversial issues on which the key players have different opinions. On the
one hand, some of these targets seem to be too ambitious for some respondents in the current
educational context in Vietnam. On the other hand, for some respondents some items are no
longer important or appropriate when the target is to integrate ICT in education, rather than
replace traditional ways of teaching. For example, related to Internet access in all schools, one
respondent comments the following:

“It is not really necessary to have Internet in the classroom at this time (depending on
schools' conditions), because class size is big in Vietnam so it is difficult to manage the
class.”

The same respondent comments also that “… in order to change the quality and learning and
teaching activities, it is necessary to have a learning resource center which students can easily
access, get information for learning activities.”

About “Open resource centers in all schools” (SD = 2.07) and “A computer lab in all schools”
(SD = 2.42) another respondent has the following remarks:

“In every school, it's very important to have a computer lab. However, at this stage,
many schools are equipped with a computer lab already. So I don’t think it should be a
priority at this moment.”

While another respondent comments the following:
“Schools labs are vital to ensure an environment for students to practice using ICT. In addition, in the classrooms, there should be computers connected to projectors for teaching and learning activities.”

Also the target to have “students in HE institutions bring their own device (laptop, smartphone, tablet, ...)” (SD = 2.43) evokes strong comments. One respondent is really against this, as it would create a digital divide between have and have-nots. Again, some respondents believe that this is too early for Vietnam, for example:

“Access to ICT is very crucial to students. However, students do not need to bring their own laptops or mobile phones. Although mobile learning is growing fast now, I don’t think Vietnam is ready for this yet.”

For most of these items related to “Connectivity and access to resources in schools” (dimension 1) no consensus has been achieved in the final survey round neither. Only do respondents agree on the importance of having internet access in classrooms in all schools and to target for more educational applications in Vietnamese. Moreover, in the third survey round, respondents come to an agreement that it is less important (Mean < 7.00) to offer all public school books as e-books. However, in both second and third survey round there is no consensus on the target to digitalize all textbooks.

Of particular interest is the target to have “ICT to partly replace teaching staff where there is a shortage” on which there is no consensus (SD = 2.82) (under dimension 2: “Teaching and learning pedagogies”).

One the one hand, one respondent argues that:

“Future studies will not require regular school attendance. Pupils, students or teachers will not have to go to school. They will be able to teach and learn through the Internet.”

Another respondent adds that:

“Priority should be given to developing ICT to partially replace teachers and textbooks.”

On the other hand, there are also strong arguments that the ICT cannot replace teachers:

“I don’t think ICT can ever replace teaching staff. And it doesn’t sound like a good reason to use ICT. It can be used to promote distance education, where their might me less teaching staff, or where the teaching profession takes other forms.”

In the final survey round, most respondents agree that this target is not important (Mean < 7.00).

Even though there is a consensus on the importance of addressing “ICT in professional development of teachers and school leaders” (dimension 3, see also paragraph 6.3.), there are different opinions on the modalities to provide professional development, especially regarding guidelines and standards for teachers.

“The core factor for teachers is their self-awareness to improve their application of ICT through research and teaching. National trainings of the ministry of education and training are not effective. The guidelines and standards on ICT in education for teachers are too simple.”

“I think it is difficult to create concrete guidelines and standards when ICT in education is very much evolving. It is important though to reserve some time in the pre-service
Even though there was no consensus on the target to have learning communities or communities of practice (CoP) for teachers, or to have an online platform to facilitate a national community of teachers, the qualitative comments in the second survey round explicitly mention the idea of a CoP as an important modality for continues professional development.

“CoP is the best modality for any type of learning but hard to achieve without good facilitation and motivation.”

“When teachers already have the basic skills on ICT, they need to have a CoP (simply an active forum) or a learning environment right in their school so that they could share and exchange their opinions.”

“It is necessary to let people know about CoP for better exchange of ideas.”

Only after re-evaluation in the final survey round, respondents achieved a strong consensus on the importance and relevance of the concept of CoP for exchange of experiences and learning, and to target for example learning communities for students and inter-school cooperation (dimension 5: Community/partnerships). At that point the respondents also agree to target for learning communities for teachers as well as ICT in education guidelines and standards.

A similar process of consensus building is observed related to ICT in the national curriculum (dimension 4). Even though some respondents see it as a “necessity” to include basic ICT knowledge and skills in the national curriculum, others comment that “basic ICT skills should be done as self study not in the national curriculum.” In the final round again, respondents come to a consensus that it is important to include basic ICT knowledge and skills in the national curriculum at all levels. There is no consensus on having standardized testing and certification of basic ICT knowledge and skills however.

Related to assessment (dimension 6) some respondents identified a need for a drastic overhaul of the assessment practice in Vietnam:

“Assessment, tests and examinations need an overhaul so that it reflects the way we teach.”

“These recommendations related to assessment are in line with each other and very important. Without a change in assessment, all other priorities only target on integration in and not a transformation of education.”

Again consensus has been achieved only in the final survey round for example to target for competence based, formative student assessment, or to assess the holistic development of students.

5. Conclusions and discussion

In this longitudinal panel study we have explored how a group of key players, representing the public and private sector as well as development partners in Vietnam look at the future of ICT in education in the country. The topic is very relevant, as the panel identified 97 different targets or priorities to aim for, addressing ten dimensions of ICT in education. Moreover, there is a high
consensus on the importance of most of these targets and priorities. Many items on which there is a consensus are related to aspects of teaching in learning. As observed elsewhere (e.g. in Liu and Velasquez in Jamieson-Proctor, Watson, Finger, Grimbeek, & Burnett, 2007) most agree that in education, the purpose of technology integration is to achieve learning goals and enhance learning – not to use fancy technology tools. It is perceived that the innovation lies not per se in the introduction and use of ICT, but in its role as a contributor towards a student-centered form of teaching and learning (Scrimshaw, 2004). In line with those targets, the respondents agree that it is most important to target for improved access to ICT in schools, for teachers and students. Respondents see the potential of ICT to deliver the national curriculum by promotion of e-learning and blended learning as well as for support to community participation in education. Apart from improved access, the panel members agree to also target for improved professional development for teachers and school leaders, not only on basic ICT skills, but also on skills to integrate ICT in teaching and learning. This vision on the role of ICT in education, contributing to enhance teaching and learning, is a powerful rhetorical device to promote change in the present. When it comes to very concrete ideas and targets, especially related to access to ICT in schools, respondents seem however still in disagreement. In the last survey round, the panel members come to a consensus that it is not important to target for ICT to replace teachers and that it is important to target for internet access in all schools.

The discussion is in fact not so much about ICT in education, but more about how the respondents see education itself. It is understood that ICT-driven developments challenge many assumptions of what students should learn in schools and how education should be delivered (Voogt, 2010). UNESCO (2004) argues for example that the potential of ICT may not be optimized if there is no shift in the education paradigm. In a study on ICT in education in Vietnam, Nykvist, Lloyd and Vui (2003) argue that to achieve the full potential of ICT in education, education in Vietnam would need to undergo major reform and change that has more to do with pedagogy and curriculum than the mere acquisition of ICT skills for teachers and the resourcing of schools with computer networks. In the second survey round, respondents see the potential of ICT applications for teachers for continues assessment or testing, for self-regulated achievement assessment for students or for student peer assessment. Some respondents argue also for a drastic overhaul of the assessment practice in Vietnam. But it is only in the final survey round that all respondents come to an agreement on the importance of related targets. Some respondents promote the idea of learning in communities of practice, not only for students, but also for teachers. Again they only come to an agreement on the importance to target for online learning communities for teachers and learners in the third and final survey round. In general, there is more controversy on more ambitious targets which could potentially transform education in Vietnam. In other contexts, researchers have identified this as an integration mindset which privileges existing ways of doing things. They argue that there is a well-established pattern of applying or integrating new technologies into existing practices (Bigum & Rowan, 2008). Teaching staff learn to use those technologies, which can be incorporated into their teaching activities most easily, rather than those which could most radically change teaching and learning practices (Kirkup & Kirkwood, 2005). School systems organized around age-grading, traditional curricular sequencing and accepted professional accreditation have struggled in adapting to new, learner-directed technologies (Collins & Halverson, 2009).

According to Collins & Halverson (2009) we already have a vibrant, highly charged discussion about the goals of education. They argue that parents, citizens and policymakers need to continue to push for a more expansive view of education reform, and to address how new technologies
can help us reshape these institutions that we have come to rely upon. The application of the Delphi technique in this study has contributed to consensus making on these more controversial targets and focused the debate on education reform. The policy Delphi method’s unique strength is that it incorporates education and consensus-building into the multistage process of data collection, thus enabling description of agreement about specific policy options among key players (Rayens & Hahn, 2000). Based on strong qualitative arguments of some panel members in the second survey round, consensus has been achieved in the final round. However, researching the future is not a one-off exercise in forecasting. Facer & Sandford (2009) foreground the exploration and creation of possible futures as an ongoing activity. This Delphi exercise can be considered as the kick off of continues debate on education reform and the role of ICT therein. To keep the momentum going it is important that findings lead to policy development. Also participants in this study find it important that policies and plans should be developed with involvement of all stakeholders, including teachers and students, and that research should be promoted as basis for proper policy formulation on ICT in education.

Main conclusions
- Respondents in this panel study address ICT in education in a holitic way. There is consensus on a large amount of targets to aim for, addressing a multitude of aspects of ICT in education.
- Starting point and most important targets for the respondents are related to ICT to enhance teaching and learning.
- There is general agreement on the importance to target for improved access to ICT for teachers and learners and to use ICT to deliver the curriculum by promotion of e-learning and blended learning.
- There is a general agreement on the importance to target for improved professional development for teachers and school leaders, not only on basic ICT skills, but also on skills to integrate ICT in teaching and learning.
- However, there is no general agreement on concrete ideas and targets, especially related to access to ICT in schools (for example to have computer labs, computers in classrooms, ...).
- There is controversy on ideas and targets that could potentially transform education in Vietnam, for example related to assessment, curriculum and modalities of teacher professional development.
- The Delphi technique led however to consensus building on these more controversial ideas and targets. As such the technique can direct the debate related to educational reform in Vietnam.
- The panel study led to an agreement on the importance to target for communities of practice for students and teachers and to use ICT to enhance these communities.
- To keep the momentum of the debate going, policies and plans should be developed with involvement of all stakeholders.
References


