Teachscape Professional Development Programs for Teachers:
An Analysis for the Singapore Ministry of Education

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Abstract

With an ongoing interest in the professional development of over 22,000 teachers, the Singapore Ministry of Education (MOE) has commissioned this analysis of the Teachscape professional development programs for teachers. Three specific questions have been forwarded by the MOE: Does Teachscape motivate the teachers to participate? What are the tradeoffs between online and offline (face-to-face) professional development? Will Teachscape assist in the development of an effective and sustainable online professional community of practice? These questions are analyzed from the perspective of current education research.

The results of the evaluation are generally positive, with a few caveats and suggestions for improvements.
Introduction:

With an ongoing interest in the professional development of over 22,000 teachers, the Singapore Ministry of Education (MOE) has commissioned this analysis of the Teachscape professional development system for Teachers.

Along with the IT masterplan (Appendix 1), the ministry is constantly investigating the possibility to cooperate with world-renowned organizations to produce high-quality training and resources for teachers professional development.

An informal survey about teachers reactions to the current professional development programs indicated that teachers want:

- Flexible training schedule — All current face-to-face workshops have fixed schedules and are conducted at centers outside of schools.
- Self-pace learning — Generally, the workshops are conducted after school during the weekdays. Physically and mentally, teachers are tired and exhausted after their school’s work. In addition, it is a waste of their time and energy in traveling from school to the center.
- Sharing and collaborative opportunities with teachers from both within and other schools.

Teachscape, which engages a team of world-renowned educational designers to work with clients to develop customized professional development programs based on existing professional development efforts and their immediate teaching and learning needs, is one of the several existing services the Ministry is strongly considering for possible partnership. ²

The Ministry of Education has asked that three specific questions be addressed in this evaluation:

1. Does Teachscape motivate the teachers to participate?
2. How does Teachscape accommodate the tradeoffs between online and offline (face-to-face) professional development?
3. Will the use of Teachscape services and resources result in a more effective and sustainable community of practice among teachers in Singapore?
The Analysis and Evaluation:

The three questions will be analyzed from the perspective of current education research. This research is used as the basis for rating the features and framework of Teachscape. Recommendations will then be made based on the evaluation.

The following evaluation indicators are used in the margin for ease of reference:

- indicates a strength or positive aspect of Teachscape
- indicates an area of potential concern
- indicates a serious weakness

Question 1: Motivation

Is Teachscape effective at motivating teachers to participate in this learning community?

This section explores how the learning activities of the courses at Teachscape and its online structure will motivate teachers to participate and learn. The analysis begins by asserting the importance of motivational factors in learning and asking what motivates/detracts teachers active participation. This is followed by an analysis of how Teachscape addresses these issues.

Why motivational factors are important for getting teachers to learn new teaching approaches

Just like the students, teachers will ask why are we studying this? Such words of skepticism are not uncommon among the teachers who attend the teaching workshops. What s wrong with our teaching? Does the change address a real need? Will students show an interest? How do I know the change will have the desired impact? What about the time, energy, skills I need? What about the conflict with my other agendas? It is important to recognize that teachers are not acting irresponsibly when they hang back from an innovation, saying I really don t have the time!

Just because an opportunity appears, does not mean that learners will feel motivated to take it. There is no reason why simply providing a resource should yield immediate and profound transformations. The discovery of opportunities needs to be guided (Perkins,
1995). It is obvious that effective learning involves being strongly engaged in activities that capture the learner’s interests because of their intrinsic qualities as well as participation in communities (Greeno, 1996). Hence, it is important for MOE to look into how to motivate teachers to engage in professional development activities so that the teachers can most benefit from them.

**What motivates teachers to participate?**

Questions about motivation and engagement tend to frame from the following three perspectives, with an emphasis on extrinsic motivation in the behaviorist perspective, with an emphasis on intrinsic motivation in the cognitive perspective, and an emphasis on engaged participation in the situative perspective (Greeno, 1996).

**Extrinsic motivation**

This includes rewards, punishments, and positive or negative incentives. Some current extrinsic motivations for teachers are: It’s a requirement for all teachers in Singapore to attend 100 hours of training per year; recognition or more credits for advancement in pay and the reverse; mandatory from schools and principal. But it is important to note that the effects of these extrinsic motivators depend on the internal goals and needs of the individual teachers.

However, the major finding by Lepper & Greene shows that if people are rewarded for doing things they would choose to do for intrinsic needs, they will no longer be willing to do them without the rewards (Lepper & Greene, 1979). In other words, extrinsic motivators might diminish one’s interest in learning because the goal becomes the reward rather than learning. Hence the designers and the policy makers at MOE might have to take this into consideration when devising the extrinsic motivators.

**Intrinsic motivation**

This includes ways to foster learners’ natural tendencies to learn and understand. Research shows that teachers have very high intrinsic motivation. They value youngsters learning and will work hard to foster it. The gain of seeing youngsters learn spurs them onward in their efforts to teach to their best of their abilities. Another motivation of teachers is the pleasure in the artful exercise of the craft of teaching (Perkins, 1995). In other words, teachers will be highly motivated by activities that they deem are relevant and useful to their teaching and will improve their professional skills that lead to better teaching.

We will examine how Teachscape addresses intrinsic motivation by combining the work by Malone & Lepper (1981, 1987) and Keller (1998):

- **Challenge**—Level of challenge must be individualized for and adjusted to the learner.
• **Attention and curiosity** — Attention should be maintained throughout the lesson. A way to do so is by curiosity. Cognitive curiosity is aroused by information that conflicts with the learner's existing knowledge or expectation. It encourages the learner to seek new information that remedies the conflict.

• **Control (contingency, choice, and power)** — Contingency: What the lesson does should be a result of the learner's actions and responses. Choice: Learner has choices to determine sequence or level of difficulty. Power: lessons in which learners' actions have powerful effects will be very motivating.

• **Relevance** — Showing learners that what they are learning will be useful to them in the meaning of relevance.

• **Satisfaction** — This includes
  1. enabling learners to apply what they have learned in real and useful ways
  2. providing positive consequences that follow progress, giving encouragement during time of difficulty
  3. being fair consistent and intelligent evaluation of learner actions

**Engaged participation**

This includes engagement that maintains the person's interpersonal relations and identity in communities in which the person participates. It emphasizes how people's very identities derive from their participatory relationships in communities. Learners can become engaged in learning by participating in communities where learning is valued. (Greeno, 1996) The motivation to learn the values and practices of the community is tied with establishing their identities as community members (Lave and Wenger, 1991). In short, teachers will be motivated to participate if they are engaged in a learning community that value learning. We will examine how Teachscape attempts to engage participation from the situative perspective (Lave & Wenger, 1991) and its efforts in supporting transformative communication (Pea, 1996).

**What detracts teachers from participating in professional development courses?**

This analysis will also include a look at some factors that detract teachers from participating and how Teachscape addresses these issues.

**Time and workload**

Teachers face tremendous demands of their time and energy from schools, principals, parents, apart from their teaching related duties. They do the best they can to encourage learning and good teaching but they are also trying hard in order to accomplish as much as possible the demands. A typical and natural strategy will be to invest a little bit of their resources in everything. The tradeoffs are that the teachers constantly feel that they lack time and effort in participating in meaningful activities. This in turn leads to a feeling of boredom, lack of appreciation, lack of control, and feeling beleaguered by dozens of agendas.
**Issues related to online learning**

- Lack of confidence and trust in this new learning environment.
- Lack of confidence/fear in handling and using technology.
- More demanding on writing

(This issue will be discussed under Question 2, Online vs offline learning)

**How Teachscape addresses these motivational factors?**

Since we have no access to the on-site training provided by Teachscape, our evaluation is based on the online description and online training components of Teachscape. We will examine how the structure and content of the online courses provided by Teachscape address the motivational issues. For the sake of simplicity, our discussion is based on the course on Geometry: Calculating the area of a triangle.

The key online learning components of Teachscape include:

- A multimedia content resource library with:
  - Video-based case studies that illustrate and analyze exemplary teaching in real classrooms
  - Examples of student work from featured classrooms
  - Teachers’ reflections on their classroom instruction video
  - Specialist commentary
  - Lesson plans, standards, etc.
- Facilitated discussion Forum

Please refer to Appendix 2 or [http://www.teachscape.com](http://www.teachscape.com) for an overview of Teachscape structure and its key components.

**Extrinsic Motivation**

Each course participant will have an administrative outcome, typically a CEU or similar form of professional development credit. Teachscape academic partners will offer academic credit for select Teachscape courses. However, the extrinsic rewards (or punishment) in motivating teachers to take up the training will mainly depend on MOE’s teachers’ policies.

**Intrinsic Motivation**

**Challenge**

The challenge of teachers comes from working on the course activities. For example, activity 1 requires teachers to (1) describe an effective strategy to introduce the concept
of area to their students. (2) How can you help students distinguish concept (what something is) from procedure (how to find it)? Why does this matter? This activity requires teachers to have a clear understanding of the content (what is area?) and the pedagogy behind her teaching approach from watching the videos, as well as be able to articulate and analyze their thinking process. These challenging activities will motivate teachers to reflect and hence promote learning.

However, learners need to be trained to participate in challenging activities such as formulating and evaluating questions and problems, and constructing and evaluating hypotheses, evidence, arguments, and conclusions (Greeno, 1996). Considering this is the first activity of the course, we are concerned that some of the activities could be over demanding from teachers. Scaffolding activities should be built into the training sessions to enable teachers to take advantage of these thoughtful practices.

**Attention and Curiosity**

Attention is fostered by rich content and the thoughtful ways of teaching. For example, the lesson emphasizes teaching the concept first, procedure later; learning math through writing; probing from the basic concept such as what is area. Teachers learn through the videos of case studies, chunked content and accompanied exercises, as well as the explanation and analysis from the experts (Dr Judah Schwartz in this case). Teachers are motivated by seeing their practices match with research and learning principles. The insightful views from the experts will also spur teachers' interest and inspiration. For example Dr Schwartz’s comments on how to teach areas by turning the grid papers are very inspiring. Curiosity is fostered by comparing the lesson teaching approach with their own classroom teaching. Each course is built around video of real classroom interactions among teachers and students that serve as shared examples for observation, discussion, and reflection.

However, we thought that there weren't sufficient evidence and interactive activities to ensure that teachers' attention will be captured by this rich content and thoughtful activities. Activities are clearly described but the tradeoff is it might be hard to keep learners' attention to read the lengthy description. A point to note about the language used is to avoid using jargon and buzzwords so that the message can be easily understood by the teachers.

**Control**

Teachscape is designed to give its learners full control. The professional development goals of the course are clearly stated at the beginning of the course, performance expectation is made clear to the learners. Site map is available. Learners can choose to go to which courses or begin from any part of the course. The structure provides learners with almost full control of where to start learning. Scaffolding activities such as dive in
activity is provided and learners can do the activity as and when she likes. Run time of video is clearly stated so that learners can control their learning time.

But the information on estimated time to complete the lessons is not provided at the course. One may argue that the learning time depends on individual but an estimation could prove useful for learners to formulate their own learning plan.

Relevance

The course activities are related directly to teachers’ classroom practices. Each course covers a wide range of resources from the lesson plans, standards, additional resources to special needs for ESL learners of the topics. These resources are relevant to the needs of teachers. The structure of the content is well designed and the commentary from world-renowned educators provides opportunity for teachers to learn from the experts. The activities are thoughtful and they aimed to engage learners in examples of the very target performance objectives. For example, by asking teachers to select two to three journals and write a two-page analysis will allow them to explore how writing mathematics in journals builds mathematical understanding, a performance goal of this course.

However, it also depends very much on the course facilitators to help the learners to see the relevancy of the materials and activities.

Satisfaction

All the activities are focused on classroom teaching where teachers can apply the ideas directly to their teaching. Teachers can compare the teaching they observe in the videos to their own practice. The video of classrooms in action provides a shared focus for analysis and reflection.

However, it is not clear from the online course that learners are given encouragement and sufficient help during times of difficulty, and consistent evaluation.

Engaged Participation

Teachscape model appears to support the Transformative Communication (Pea, 1996) that will be occurring as experienced teachers are engaged in the online conversations along with novice teachers. (This point will also be discussed under Question 3)

Teachscape provides both on-site and on-line opportunities for teachers to analyze instructional approaches demonstrated in the course video with support from colleagues and then find ways to adapt and implement these approaches in their own teaching.

At the conclusion of each course, teachers will be encouraged to invite colleagues to observe them as they use what they have learned in their own classrooms. Colleagues
then have opportunities to discuss their observations and share insights and experiences with a larger community of peers—both online and on-site. Teachscape encourages and supports such interaction through on-site study groups and online threaded discussions and learning forums.

But as we argued earlier, providing opportunities does not necessarily guarantee participation. It depends heavily on how the facilitators build in activities to encourage participation.

It is unclear from the online course-site that members of Teachscape have formed a community of shared goals. Based on the content at the Discussion Forum, there is no evidence to indicate that members are genuinely involved in activities of the community and that people have established their identities in the community they joined.

- Lack of Presence and visibility and rhythm — There is no visible presentation of the community of the subgroups. No rituals present in this community. One can see only her own profile and those that have participated in the Discussion Forum but not the rest of the community.
- The Discussion Forum meant to promote knowledge-generating interactions — This depends on active participation among members. Since the subgroup community is private, we have no chance to investigate how interactions are carried out at the learning Forums.
- Personal identities/communal identities — People belong to a group, but the group profile is not clear and visible to the member. Sense of belonging is not strong.
- Active community building — There seems to be no designated roles for the members except as a participant.

In addition, the learning activities provided at the course (online) don’t seem to encourage collaborative learning or collective learning (Pea, 1996). The activities seem to design for working alone rather than working in groups. It is unclear how the highly interactive conversational exchanges -- conjectures, responses, and repairs for all participants to determine what is meant from what is said and done -- are carried out among the learners and the facilitator.

**Time and workload**

The Teachscape model aimed to provide learning opportunities both at home and at school, accommodating teachers’ demanding schedules. Always-available online resources and tools fit every teacher’s schedule. Relevant professional development is provided at each teacher’s convenience, thus protecting classroom teaching time.

However, a concern from our investigation is that because of its rich content and thoughtful activities, the course might take up more learner’s time than expected. We recommend MOE to customize the materials and content to suit the context of Singapore teachers.
Question 1 Summary

*Is Teachscape effective at motivating teachers to participate in this learning community?*

The analysis shows that Teachscape has given sufficient extrinsic motivation by issuing professional development credit. However, the extrinsic motivators ultimately depend on MOE’s policies.

In the effort of fostering learner’s natural tendencies to learn and understand, Teachscape’s rich content and thoughtful learning activities are directly related to teacher’s classroom practices. The activities are also challenging enough to enable teachers to reflect. In particular, we think that the expert’s comments and meaningful new teaching approach will inspire teachers and arouse their curiosity and attention. Its structure is flexible enough to allow learners to plan their own learning and keep track of their progress. However, a concern is the appropriateness of contents and activities in terms of their level of difficulty and relevancy to Singapore context.

Based on its online description, Teachscape model appears to support the transformative communication, that experienced teachers are engaged in the conversations and activities along with the novice teachers. However, since we ve no access to individual community, it is not obvious from the general Teachscape online course-site that its members have formed a community of shared goals and meaningful discussion have take place in this learning community.
Question 2: Online vs Offline

How does Teachscape accommodate the tradeoffs between online and offline (face-to-face) professional development?

Technology makes transformation possible, but it does not guarantee it. Technology can't be the fix of all problems. In this section we will explore how professional needs of district administrators, teachers, and professional developers can be met online. However even though it affords possibilities not available offline, there are tradeoffs associated with an online presentation. Likewise, an offline, face-to-face program affords possibilities unique to its offline nature. Teachscape, built around a web-based platform, features both online and offline capabilities. With these features, Teachscape makes accessible best practices of teachers, commentaries of reading, math, English Language Learning specialists, and results of university researchers. In our analysis, we evaluate how Teachscape complements the downsides of being online with its offline, onsite components and make appropriate recommendations to MOE.

There are three areas that guide our inquiry about online and offline training programs:

1. We explore the advantages and disadvantages associated with online and offline training.

2. We examine the video-based case studies afforded by Teachscape. Teachscape uses the metaphor of a visit to the classroom by providing case-study video. How does this viewing differ from an actual visit to a classroom?

3. We consider the melding of online and offline communities. We evaluate the combination nature of Teachscape, which offers on-site and on-line components. The process of discussion and reflection begins on-site and is sustained in online discussions and learning forums. In this way, a live discussion can take place about a video-base case study.

I. Tradeoffs: Online vs. Offline

Helps the spread of knowledge

Mendel's concepts of law of genetics lost to the world for a generation because it didn't reach the few who could reach the few who could grasp and extend it. Dr. Vannevar Bush, in charge of 6,000 scientists as director of the Office of Scientific Research and Development during World War II, urged scientists to make knowledge more accessible. Vannevar Bush believed that knowledge should evolve and endure throughout the life of a race rather than that of an individual. In 1945, Bush predicted that there could be a
device to supplement man’s memory with a combination of technologies so that knowledge could be made accessible to many people.  

Teachscape’s use of multimedia can help promote this spread of knowledge.

**Beyond Time and Space Barriers**

One of the most profound capabilities of an online platform is the ability to transcend geographic and time barriers. As stated by Brown and Duguid, the more isolated learners are, whether physically or socially, the more they need access to peers, communities of practice, and other resources. The online environment can link people who ordinarily would have little contact. A web-platform has the ability to provide a consistent, updated program as well. An online training environment can have the potential to reach a large number of people, possibly at lower costs, as some companies dedicated to distance learning hope to procure.

Online access allows the user to have access 24 hours a day, seven days a week. People can send emails or log-in without worrying about disturbing the provider or recipient. However, some people may not have equipment at home. Some people see a benefit of not seeing people face to face. Still, in some situations, people may prefer face-to-face discourse as they can see their audience.

**Failure of Equipment:**

An online training program faces challenges of being online. Limited access to equipment and lack of technical support could make users resentful of the environment which detracts from the learning experience. Even though the technology has 24-hour capabilities, users may not have 24-hour access to the technology. Also, if someone has a negative experience using the technology for his/her learning, he/she may be more unlikely to use it in his/her teaching. Some people criticize that email is not a substitute for face-to-face communication. For most people, talking is the most natural way to communicate, and voice chat is fast becoming a viable way to talk online.

There is a possibility that if teachers use technology effectively for their own learning, they may have more confidence to use technology in their own classes. However, if people experience difficulty using the technology, then this may distance them from using it in their own classrooms.

**Privacy and Control**

Furthermore, people may not want their comments archived and viewed by others. What is said may leave them vulnerable for criticism by a co-worker or an administrator. At least with face-to-face communication, you can choose who you talk with about which topics. In the discussion forums, the comments were available to many people.
Although voice chats are becoming more available, lack of participation in the chats can be problematic. Online communities build trusting relationships with their members. A privacy statement helps but needs to be backed up by actions. There are many online tracking tools that can measure time spent on a site, traffic to discussion groups and links, and attendance in chat events. How will the gathered information be interpreted and will participants be informed about what is being collected?

Lack of participation in a threaded discussion thwarts significant dialogue.

A unique feature of the Teachscape discussion forum is that comments can be edited after they are written.

**Consistency**

One of the powers of the Internet can also be one of the problems. It may be difficult to ensure that everyone is looking at the same document. Because the web allows for changes to be recorded much easier than, say a book, users may not be referencing the same artifact even though it shares the same title.

**Earning Credit**

Accounting for professional development when on-line might be difficult. Accounting for professional development on-line poses a challenge do teachers get credit by the hour, by completion of a course, by hyperlinks used?

**II. Video-based case studies**

**Edited Video**

Each Teachscape case study is built around professionally produced video that includes examples of actual classroom instruction.

The video is annotated with cues that identify critical moments that the viewer might not otherwise notice. These resources will require more than unedited dumps of classroom exchanges- need annotations, indexing, search tools.

However, there are pros and cons to an edited video. The part left out may be the very part helpful to a particular teacher.

**Eyes of the Camera**
A video limits the viewer to what the director has decided to focus on, the camera has filmed and the editor has chosen to include in the final cut. A visit into a classroom can allow the visitor to talk to the students, look at bulletin boards, and stroll through the school. Perhaps the visitor may even visit the class for at another time for another lesson. Are the students on best behavior because there is a camera in the room? A video does not include the political atmosphere of a school or even if it’s rainy outside or there’s a carnival around the corner from the school.

*Ability to Replay*

With its edits, narrations, analyses, and commentaries, a video can provide the best of a live performance. Also, the video can be replayed. During a real visit to a classroom, the viewer gets one chance at viewing.

**III. Melding of the online and offline.**

Teachscape is a professional development plan that incorporates both online and offline components.

The contents can be customized depending on the needs of the client. The Teachscape learning process includes on-site training for district staff and teachers. Teachers also participate in on-line training.15

Teachscape offers users a chance to peek into real classrooms by viewing video-based case studies have been carefully selected and organized in order for the teachers to see exemplary teaching that include analysis by the teacher and specialists about specific parts of the clip.

**Question 2 Summary**

*Is an online or offline environment better for professional development programs?*

By transcending barriers of time and place with its online components, Teachscape promotes making knowledge accessible. However, as MOE decides whether to adopt Teachscape as its professional development system they should consider the following:

- On-line discussion groups may lack participation
- People may be reluctant to voice their true thoughts on-line
• Receiving credits on-line may be difficult
• On-line videos guide the viewer too much and prevent him/her from seeing other parts of the classroom

Although there are tradeoffs of being online and offline, there are two main features of Teachscape that ameliorate this situation. Facilitated discussions both online and onsite help learners, if they choose to do so, to connect to an outside, specific work group through an online chat as well as allow for real-time discussion of a particular video or question. Edited videos with commentaries guide the observation process. Often, when a visitor goes to a class, he or she dives in and can’t talk during the lesson as the teacher is busy working.
Question 3: Sustainable Community of Practice

Will the use of Teachscape services and resources result in a more effective and sustainable community of practice among teachers in Singapore?

Background And Rationale

In-service professional development programs in Singapore are currently conducted as face-to-face workshops, as is common practice in other countries. Unlike the US, however, the Singapore Ministry of Education has invested heavily in professional development, and is currently requiring 100 hours of training time per year for each of its teachers. National professional development events, organized by subject content area, are very time consuming and require significant travel. While these face-to-face events are effective at creating some cohorts of teachers, this mode of building community among teachers is expensive and its impact is limited to the event itself.

The Ministry of Education is looking for a way to increase and sustain professional collaboration among teachers throughout Singapore. In May 1997, a Teachers-On-Line service was launched to facilitate communication between the Ministry of Education and teachers, as well as communication between teachers. The hope was that, electronic communication will be an indispensable part of teachers’ lives whether in their dealings with the Ministry or with each other. Teachers-On-Line is a first step under the IT Masterplan to foster such communication. It will provide a major channel for teachers to communicate with the Ministry and with each other, and for the Ministry to obtain feedback and views from the profession.

The network is currently in online, and its by-line is Building a Fraternity of Reflective Teachers. The usage does not seem to be widespread, however. Will the deployment of Teachscape build on this effort?

Relevant Design Principles

In exploring Question #3 above, the Teachscape services and resources are discussed in light of several relevant learning design principles. At the heart of the review is the research on Situated Learning, where the conception of learning is expanded beyond behavioral and cognitive perspectives to include the social context in which learning takes place.

"...learning involves the whole person; it implies not only a relation to specific activities, but a relation to social communities - it implies becoming a full participant, a member, a kind of person... Activities, tasks, functions and understandings do not exist in isolation; they are part of broader systems of relations in which they have meaning. These systems of relations arise out of and are reproduced and developed within social communities..."
Reinforcing this point of view is the notion that collaborative inquiry and discourse are essential:

This approach (of collaborative inquiry) reflects our belief, building on Vygotsky, that robust knowledge and understandings are socially constructed through talk, activity, and interaction around meaningful problems, tasks, and tools.

The opportunity to situate learning in an online context presents exciting possibilities and new challenges. This analysis reviews some of the research that a framework for considering the potential effectiveness of online technologies.

**Activity Centered Design**

At the center of the model are collaborative groups.

A common model for deploying Teachscape is to use the online service to enhance face-to-face in-service professional development. In this deployment mode, an existing social network is supported with online affordances that facilitate collaboration.

The online discussion features and resources in Teachscape will be used in a collaborative fashion only if the teachers are trained and moderated to do so. Within Teachscape, personal learning progress, self-assessment of teaching, journaling, and user-accounts are all structured for individual use. The only collaborative feature at this time is the threaded discussions. There are no affordances, for example, for teachers to work collaboratively on an assignment. A virtual study group or shared journal would be a helpful future addition.

Teachscape supports conversation in the form of asynchronous threaded discussions within the cohort. This can easily be used to extend the face-to-face conversations that are already taking place. Teachscape has found, however, that most institutions prefer that the conversations NOT be made accessible to the Teachscape user population overall, keeping the dialog within an existing institutionally defined boundary. As such, public conversations with unrelated institutions who also use Teachscape are possible but uncommon. The Ministry of Education may configure their use of the system as they wish.
Transformative Communication

(in contrast with transmission and ritual communication) learners participating in inquiries at the frontiers of knowledge in a field, and with mature communities of practitioners in a discipline, I am describing as transformative. 24

Our media technologies need to be vivified to match highly interactive conversational needs. They should allow for the expansion of these transformative capacities of human communication for learning within and across schools.25

collaborative networks call for cognitive apprenticeships using authentic tasks from communities of practice, and teleapprenticeships call for some clarity Who shall be connected to whom, from what communities, for what purposes? What shall be the participation protocols for new networked learning environments? 26

The Teachscape model appears to support the Transformative Communication that will be occurring as experienced teachers are engaged in the online conversations along with novice teachers. With the use of voice-over reflective comments from experts inserted in the video case study materials, the Teachscape framework and content in effect creates a form of Cognitive Apprenticeship for the novice teachers.

If the Ministry of Education is clear about the roles of the participants and their expectations for the system’s use, then it is possible to support teleapprenticeships through the use of Teachscape. For this to be effective, it will be important for the Ministry of Education to clearly identify the individuals who are serving the role of facilitator, both online and in person.

RAMP Model

The RAMP model suggests that introducing new technologies into the workplace affects all four elements: work Roles, technology Artifacts, Metrics for success, and supporting changes in Process. This model suggests that all four elements, and their interactions, should be investigated and, in effect, designed for both traditional and on-line workplaces. 27

There is nothing intrinsic to Teachscape that makes the roles of the participants visible. In fact, it is not even clear who the members are within your community, let alone what their role is. For example, the Community home page lists public forums, but does not provide a way to find people. Using the pull-down menu to enter a specific community results in a list of community specific forums, but again no mechanism for identifying who is a member of your community. Adding a community roster, with icons that indicate role and extent of participation (eg: the eBay member icons) would be an important feature for promoting community.

Facilitating Online Communities

OLC managers cited numerous lessons learned 28
1. Invest in means rather than ends. **Attention to community building** may well be key: OLC managers said that a sense of community or belonging is essential to achieving a high level of participation. Explicit community building activities are critical.

2. **Focus relentlessly on the needs of members** not on the needs of sponsors, executives, administrators, or technologists.

3. Resist the temptation to control.

4. Don’t assume the community will become self-sustaining. One organization created a role called **social weaver** — someone who was responsible for initiating a small number of members into the OLC.

5. Consider environmental factors (cultural factors, leadership style).

6. Extend community building beyond the discussion space. The majority of respondents said they have used **some kind of event** to build traffic or increase participation in the OLC.

7. Seek out and support members who take on **informal roles** (advocate, leader, instigator).

A community is a group of people who are willing and able to help each other.

Teachscape does not provide any specific affordances that support item#1 or item#6. That is to say, it will be up to the implementation team in Singapore to sponsor community building activities and provide the necessary leadership for ongoing community building. However, the individuals assigned to community building roles will need to find convenient work-arounds. For example, the need for social weavers (item #5) is real regardless of which online service the Ministry of Education chooses, but Teachscape appears to be neutral in its support for members with this role. It is technically feasible that the home page for Singapore subscribers could have Singapore specific news and events highlights. However, the availability of that customization requires further investigation and feedback from Teachscape.

**Legitimate Peripheral Participation**

It concerns the process by which newcomers become part of a community of practice. A person’s intentions to learn are engaged and the meaning of learning is configured through the process of becoming a full participant in a sociocultural practice.

The very existence of Teachscape in the professional development landscape in Singapore will address the novice teacher’s need for a process by which to learn how to become engaged and expert in the practice of teaching. It has been found that asynchronous online discussions provide the novice with a safe entry point into the community. Teachscape also provides a venue for novices to listen to discussions among more experienced teachers, an opportunity that is not always available to those who are new to a community. Without this, the novice must also negotiate the social boundaries surrounding experts, and may in fact never become true participants in the community.

For an additional fee, Teachscape resources can also be purchased to develop new content modules specific to Singapore. This could include, for example, case studies on the practice of collaboration between teachers.
Social Scaffolding

all communities are based on timeless social dynamics that transcend the medium of connection... These (design) strategies summarize an architectural, systems-oriented approach to community building that I call Social Scaffolding.

1. Define and articulate your purpose
2. Build flexible, extensible gathering places
3. Create meaningful and evolving member profiles
4. Design for a range of roles
5. Develop a strong leadership program
6. Encourage appropriate etiquette
7. Promote cyclic events
8. Integrate the rituals of community life
9. Facilitate member-run sub-groups

Teachscape's greatest strength appears to be its content. The community aspects of Teachscape are limited to its support for threaded, asynchronous discussion. The creation of an effective and sustainable community of practice in Singapore will likely depend on additional social scaffolding, as described by A. J. Kim. The needs for member visibility (item #3), support for various roles (item #4), and the promotion of cyclic events (item #7) have already been discussed. One of the features from the Kim list that is unique is the notion of a flexible gathering place (item #2), an attribute more commonly associated with synchronous communities. It is possible that the Ministry of Education can use other services for live interaction, but integration of services is highly recommended over time.

Although the Teachscape infrastructure supports separate communities as desired, it does not address the notion of member led sub-groups or the natural spawning of ad-hoc sub-groups. A vibrant professional community in Singapore will, over time, want to have this ability available to the community.

Teacher Learning: Types of Knowledge

three prominent conceptions of teacher learning

Knowledge-for-Practice — hinges on the idea that knowing more leads more or less directly to more effective practices primarily what is called formal knowledge about teaching, widely referred to by educators as the knowledge base.

Knowledge-in-Practice — the emphasis is on knowledge in action: what very competent teachers know as it is expressed or embedded in the artistry of practice, in teachers' reflections on practice, in teachers' practical inquiries, and/or in teachers' narrative accounts of practice.

Knowledge-of-Practice — knowledge making is understood as a pedagogic act — constructed in the context of use, intimately connected to the knower, and, although relevant to immediate
situations, also inevitably a process of theorizing emanates from systematic inquiries about teaching, learners and learning, subject matter and curriculum, and schools and schooling.\textsuperscript{33}

When teachers work in inquiry communities, they enter with others into a common search for meaning in their work lives.\textsuperscript{34}

One of Teachscape’s key strengths is that the practice of teaching is not simply presented as Knowledge-for-Practice. Instead, the learner can see Knowledge-in-Practice through the videos and commentaries about the videos. Knowledge-of-Practice naturally flows when teachers move from viewing and discussing Teachscape cases to practicing what they learn, and discussing the results. The Teachscape services could be enhanced by not only tracking learner progress through the materials, but also learner progress in practicing the application of the materials. However, the system is quite usable in its current state to encourage a Knowledge-of-Practice.

**Question 3 Summary**

The development of a sustainable community of practice depends on several design factors. Activity Centered Design considerations support collaboration and social interaction. Learning in community also depends on supporting the highly interactive conversational needs.\textsuperscript{35} The Teachscape framework provides for transformative communication through its asynchronous threaded discussions linked to the video case studies. The Teachscape framework also provides a venue for legitimate peripheral participation, providing a safe and accessible venue for the novice to join with teachers who have more expertise.

A strong community also depends on making the members and their roles visible to those in the community. Opportunities to build new relationships, find expertise within the community, and grow into a leadership role, all contribute to a strong, sustainable community. Providing the social scaffolding for these appears to be an area for future Teachscape enhancements.
Conclusion

Does Teachscape motivate the teachers to participate?

Teachscape motivates its learners by its rich and well-planned content and resources, thoughtful activities and practices, well-structured courses, and teachers can apply what they learned directly into their classrooms. Teachers who are genuinely interested in teaching will be motivated and benefited greatly from attending and using the courses.

However, in adopting the Teachscape model, MOE should seriously consider:

- The appropriateness of contents and activities in terms of level of difficulty and relevance to Singapore context. That is, whether the activities are too challenging for teachers or whether the language requirement is too demanding, etc.
- How local facilitators are trained. This is because the course structure of Teachscape model emphasizes on learning through discourse and active participation among learners. The quality of the facilitators will directly affect the learning outcomes.
- The time and workload factor and emphasize on learning rather than on extrinsic motivators.

How does Teachscape accommodate the tradeoffs between online and offline (face-to-face) professional development?

An online platform helps remove barriers of time and place. Realistically, people could access information 24 hours a day. Also by being online, people can unite based on interest. With an offline environment, people can see with whom they are talking. In some instances, anonymity may be preferred while in other cases, it is not.

Teachscape promotes making knowledge accessible. Although there are tradeoffs of being online and offline, Teachscape’s facilitated offline discussions and edited videos with commentaries help minimize the negative outcomes of a strictly online or a strictly offline community.

Some areas of concern as MOE considers to adopt Teachscape as its professional development system are the following:

- Ways to promote participation in on-line discussion groups
- Access to a safe harbor in which users can voice their thoughts
- Fair ways to account for participation
Will Teachscape assist in the development of an effective and sustainable online professional community of practice?

The review of the Singapore Ministry of Education's question, informed by relevant learning design research, suggests that the Teachscape services would be a positive step toward building a more effective community of practice among teachers in Singapore. The centralized nature of the Ministry of Education would be a positive force in providing the necessary leadership and ongoing support for community.

Some areas of concern which can be addressed over time include:

- Making the members and their roles more visible
- Support additional forms of collaboration, such as virtual study groups (subgroups) and shared journals
- Customize the homepages to include Singapore specific community news and events
- Support for synchronous online gatherings
- Provide a mechanism for Singapore teachers to spawn ad-hoc and formalized subgroups
Recommendations

We believe that a viable solution to address the needs of teachers at Singapore is to build a well-integrated array of online and on-site services that provide continuous and sustainable professional development for teachers at all experience levels, at home and at school.

From the above evaluation, we think that Teachscape satisfies most of the needs. We recommend MOE to have a closer discussion with the Teachscape team and paying attention to:

- How local facilitators are to be trained.
- How the content can be customized to suit Singapore Context
- Prepare teachers for technologies readiness.
- Issues of privacy in threaded discussions
- Accounting for credits.
- Disclosure to teachers about administrator monitoring.
- Access to the technology
- Maintenance of the technology

It is also recommended that the Ministry of Education work closely with Teachscape to develop future enhancements for its services, creating a stronger set of tools that:

- support ad-hoc and formalized community led sub-groups, and begin to integrate synchronous collaboration tools into the service.
- Makes the membership and leadership more visible to the community at large
- Richer descriptions of the context of the videos such as when they take place, what the school is like, and any special events that day.
- Audience control of videos such as choosing to view a 3rd period or 7th period class.
- Cues as to when the video was filmed and what the edited version is to maintain consistency.

By working closely with Teachscape, the Singapore Ministry of Education will maximize the impact of Teachscape as it is currently deployed, and over time, extend the impact of Teachscape on the professional teaching community in Singapore.
Appendix 1: Teacher Education in Singapore

1. Ministry of Education (MOE)
The Ministry Of Education (MOE) directs the formulation and implementation of education policies. It has control of the development and administration of the Government and Government-aided primary schools, secondary schools and junior colleges.

In order for teachers to keep up with professional developments in their fields, and judiciously apply new educational theories and practices to the classroom, a mission of MOE is to provide teachers with high-quality training, resources and environment to do their job well.

2. Teacher Training
As the main teacher training institute in Singapore, the National Institute of Education (NIE) plays a pivotal role in ensuring that teachers develop the right values and attitudes, and are equipped to perform their roles and responsibilities effectively.

2.1 Initial Training
The initial training package brings new teachers to a basic level of professionalism. It starts with full-time Foundation Training at NIE for untrained teachers, followed by Induction Training provided by Teachers Network and schools, upon their first few months in school after graduation from NIE, and Basic Training provided in schools, up to the end of their first year in schools, after graduation from NIE.

2.2 Continual Teacher Training
Given the rapid pace of change, MOE believes that the knowledge and skills that teachers acquire during their Initial Teacher Training is unlikely to last them through their entire career. The ministry provides professional training to constantly upgrade teachers to stay abreast of new developments beyond the foundation stage.

- NIE will continue to provide milestone programs to prepare teachers to assume leadership positions in schools, and in-service upgrading courses (e.g. In-service Diploma in Pastoral Care and Career Guidance, In-service Diploma in Physics Teaching) to ensure that teachers keep abreast of new developments in their area of specialization.
- NIE will have to adopt a more school-based or cluster-based approach to delivering continual teacher training for those components that require face-to-face interaction, rather than expect teachers to travel to its campus.
- IT will have to be harnessed to facilitate greater distance learning.
- Continual training courses will be more modular ("bite-sized").
- Teachers are entitled to at least 100 hours of training a year, as with all other civil servants.

3. Resources
MOE provides and develops teaching resources for teachers:
The subject syllabuses are developed by the Curriculum Planning & Development Division of MOE and adopted in all schools.

MOE provides schools with a list of approved Textbook List (ATL) and instructional materials. Schools are advised to use only those books which have been listed as basic texts.

MOE has also developed over 300 programs covering a range of subjects to support classroom teaching. The extent and the approach of adopting depend on schools and individual teachers.

MOE provides a range of IT related resources: from special programs for schools, CD-ROM developed by MOE, a range of URL links, rating lists of software, etc.

4. IT Masterplan
Launching in April, 1997, the Masterplan for IT in Education is integral to innovation in education, aimed at anticipating the needs of the 21st century and producing a workforce of excellence. The provision in the Masterplan of continuous training for every teacher in the use of IT in teaching; a teacher-notebook ratio of 2:1; a pupil-computer ratio of 2:1 enabling IT to be used in up to 30% of curriculum time; and whole-school networking in every school will place Singapore among the leaders in the integration of technology in schools on a national scale. The Masterplan were implemented in 3 phases. Phase 1 (1997) involved the 22 Demonstration schools, Phase 2 (1998) 86 schools and Phase 3 (1999) the remaining 254 schools. 37

5. Statistics of Enrolment and Education Officer (Teachers, Vice Principals and Principals) at Singapore Schools (Oct, 2000)

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Appendix 2: Overview of Teachscape

(adapted from Teachscape website, http://www.teachscape.org)
Teachscape is an educational services company dedicated to improving the practice of teaching through the delivery of internet-supported professional development programs. Teachscape provides its clients with customized professional development planning, program development, training and professional support.

1. The Teachscape learning process

On-site Training for District staff and lead teachers

Typically, the Teachscape learning process begins with on-site training. This training is concentrated at the beginning of a client’s participation in the program. Its primary objective is to train district staff to organize and facilitate online learning groups. On-site meetings and activities continue throughout the program’s implementation. During these face-to-face sessions, Teachscape staff work with district professional developers to determine how the district/Teachscape partnership can extend learning by creating and sustaining meaningful and rewarding online collaboration. District staff developers and lead teachers are provided course guides to support learning group decisions.

On-site Training

Teachscape’s case-study video and supporting resources provide the impetus for teachers to reflect on and talk about the issues that arise in their courses, as well as in their own classrooms. This process of discussion and reflection begins on-site and is sustained in online discussions and learning forums.

On-line training

Here, teachers benefit from access to a safe place in which they can try out new ideas and express themselves. They can continue a debate that originates at school into a district-wide or even nationwide online discussion--thus enabling teachers to gain perspective on their experiences by sharing them with others whose viewpoints and backgrounds may differ. Teachscape’s online forums include special events focusing on key aspects of specific courses or on classroom management or other special issues. Teachers featured in the course video, as well as the experts who share their specialist commentaries, can also be scheduled for special online discussions.

2. Key Learning components of Teachscape professional development system:

Case studies:

The online video-based case studies of exemplary teaching and learning offered by Teachscape aimed to allow teachers to examine and reflect on effective teaching practice on demand.
Video: Each Teachscape case study is built around professionally produced video that includes examples of actual classroom instruction. The video is annotated with cues that identify critical moments that the viewer might not otherwise notice.

**Online Resources:**

An integrated collection of online resources aimed to help users understand the preparation and thinking behind successful lessons. These resources include videotaped teachers’ reflections on a particular piece of their instruction, commentary by pedagogical and content experts on the effectiveness of the case practice, links to content and teaching standards, lesson plans, and samples of student work.

**Courses:**

Teachscape has created professional development courses based on its library of case studies. These courses enable groups of teachers to focus on their particular learning needs.

A course is a facilitated sequence of learning sessions and activities. For each course session, teachers work on a part of the Teachscape case study, read supporting material, complete the course activity, and participate in online discussion.

Each course’s goal is to help teachers do something explicit in their classrooms. A performance objective is defined at the course outset. For example, by the end of the "Organizing for Writing" course, teachers should be able to organize their classrooms to support effective writing instruction. That performance objective, in turn, defines an activity or project that the teacher should complete successfully by the end of the course (e.g., organize a classroom for writing instruction, deliver that instruction, and reflect on how both the classroom organization and the instruction could be improved).

Teachers engage in a course through a learning group led by their course facilitator. The course facilitator identifies and communicates to the participating teachers the organizational expectations for each session, by way of a syllabus and other course materials.

Each course participant will have an administrative outcome, typically a CEU or similar form of professional development credit. Teachscape academic partners will offer academic credit for select Teachscape courses.

**Programs:**

A program is a sequence of Teachscape courses organized to meet a school-wide or district-wide goal. For example, a district might need a professional development program to Support the induction of new teachers, or Foster an understanding of inquiry-based learning among upper elementary science teachers, etc.
Teachscape works with district partners to design and implement specific professional development programs that address their particular priorities. Teachscape programs readily accommodate different models of implementation. For instance, course activities might be different depending on whether the course is organized by a client school district into focused learning groups. Teachscape will customize the programs to amplify and extend existing professional development activities already underway in the client district.

3. The Online Components of Teachscape:

*Login/register.*

*My desk*

The starting page for the users. It contains current news, video tips on innovative teaching techniques, and a suite of learning tools that aim to help teachers to translate what they've learned from the system into their daily practice.

*School and Self Assessor:* a tool for teachers to develop their own professional development plan.

*Course Library*

Teachscape offers examples of exemplary teaching that can be utilized either as complete instructional units or as reference material for just-in-time use. Each Course contains multiple chapters of video taken from real world classrooms, as well as lesson plans, examples of student work, and rubrics for assessing that work. Teachers featured in these case studies reflect upon their practice, and specialists offer commentary on the research basis for the strategies featured in the case. Interactive assessment activities support reflective practice, and online discussion areas encourage sharing of ideas.

Users with low-speed Internet connections can access course video using unique CD-ROM functionality. This allows Teachscape to be available anywhere - even from the privacy of home, 24 hours a day. Teachers can track their progress using the Learning Tracker and take notes using their personal Journal.

*Online learning Community*

It provides educators with private, professional study groups in which learners can discuss, analyze and reflect upon exemplary practice.

Online discussions are organized by school, district, or special interest groups, creating virtual gathering spaces where teachers can talk about their learning and how it relates to their own classroom practices.
4. The teachscape Team

Teachscape has assembled a team of experts from education, learning technologies, film and video production, and interactive design.
FOOTNOTES

1 This work is actually NOT funded by the Ministry of Education. It is a report created for Professor Roy Pea by three graduate students enrolled in his course on Online Learning Communities, Stanford University School of Education.
2 Additional details about Teachscape can be found in Appendix 2 or at http://www.teachscape.com.
3 Gumpert & Chun p 374
4 Bush, V. As We May Think.
5 Nelson, As We Will Think.
6 Brown & Duguid. The Social Life of Information. P. 227
8 Kim, A.J. Building Online Communities. P45
9 Kim, A.J. P67 It’s never appealing to enter a chat room or click on a message board topic and find it lifeless and empty. It can make a community appear to be under-populated and poorly managed even if it’s not.
10 Kim. P85.
11 Kim, P69.
12 Schank, P, Fenton, J, Schlager, M, & Fusco, J. From MOO to MEOW: Domesticating technology for online communities. In their discussion about TAPPED IN, Will teacher’s unions denounce the on-line communities as competing with their interests or as a subtle way to get teachers to put in more hours without being paid?
13 Brown and Duguid. P239
14 Brown and Duguid. In a discussion about learning, We all need to learn things we didn’t set out to learn. P219
15 see Appendix for more details.
16 As of 2000, Singapore had nearly 22,000 elementary and secondary teachers or education officers, ref: http://www1.moe.edu.sg/eds/eds2000/Table02.htm
18 http://www3.moe.edu.sg/tn/
19 Lave & Wenger (1991) p 53
20 Vygotsky (1978)
21 Rosebery, Warren, Conant (1992) p 63
22 Gifford & Enyedy (1999) p 2
23 Gifford & Enyedy (1999) p 5
24 Pea (1996) p 175
26 Pea (1996) p 179
27 Bringelson & Carey (2000) p 63
28 Cothrel & Williams (1999) p 55-60
29 Lave & Wenger (1991) p 29
30 Kim (2001) p xi-xv
31 Cochran-Smith & Lytle p 254
32 Cochran-Smith & Lytle p 262
33 Cochran-Smith & Lytle p 272-274
34 Cochran-Smith & Lytle p 294
35 Pea (1996) p 178
36 Primary school is equivalent to elementary schools grade 1 to grade 6 at US; Secondary schools from grade 7 to grade 10 and Junior College from grade 11 to 12.
37 Please refer the URL for the up to date implementation progress: http://www1.moe.edu.sg/iteducation/resources/itresources.htm; see also Ministry of Singapore website: http://www1.moe.edu.sg
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Bringelson, L.S. & Carey, T. (2000) Difference (Key)strokes for Different Folks: Designing online venues for professional communities, Educational Technology and Society, 3(3) ISSN 1436-4522


