

Teacher dilemmas in the uptake of technology in
classroom: A case of game-based learning in
Singapore classrooms

Swati Mehrotra
Education Consultant
Singapore

What is game-based learning

- GBL - Balances subject matter with gameplay and application of subject matter to real life world
 - Has defined learning outcomes
 - Offers *situated practice*
 - Teachers and students collaborate - Games do not work on their own
- Digital GBL- involves engaging learners with educational content through video games - may be offered by mobile technologies

Context of digital games in classrooms

- Educational innovation- enhanced learning and education - Mixed results
- Engaging and motivating for all ages
- Transcend subject boundaries
- Experience real-world scenarios in safe environment (Squire, 2004; Shaffer, 2006)
- Interactivity, immersion, rich experience
- Integration of digital games in formal school settings

Kinds of games in GBL

- Games-to-teach and Serious games (Prensky, 2001, etc)
- Educational content + computer games (Multimedia computer-aided instruction)
- 'Learn about ...'
- Focus on 'right answers'
- Technology works

Games-to-learn (Gee, 2007, etc) - literacy oriented

Development of enactive capacities - by taking up roles

Learners 'learn to be'

Tools to learn with

Learners and teachers work

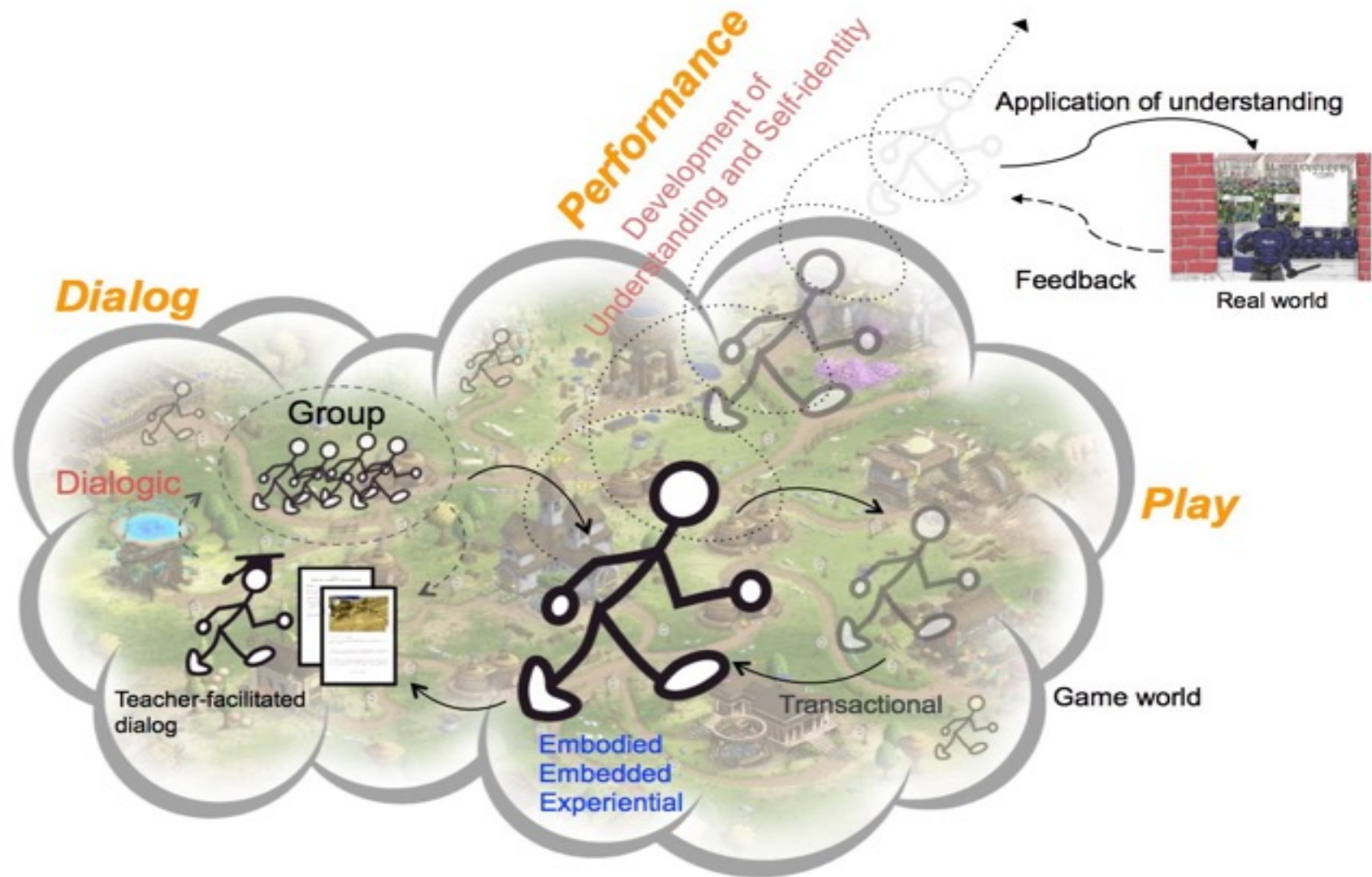
Research context

- Context: Statecraft X™ mobile game
- Multi-player, client-server game played on Apple iPhone
- Maps on “Principles of Governance” (Sec 3 ~ 15 yrs, Singapore public schools)
- Duration: 3 weeks; 6 SS lessons
- Students loaned iPhone with supporting plan
- Game session- 20 players – 2 games
- Curriculum based inquiry learning

Research context

- Based on performance pedagogy – operationalised through play and dialog
- Students learn through role taking
- Play 'between the worlds'
- Play outside class hours - anywhere with wireless connectivity
- Web-based teacher tool to monitor
- In class- teachers use dialogic pedagogy
 - facilitate learning conversations
 - Bakhtinian sense

Performance-play-dialog model of Statecraft XTM learning



Game interface



Partial view of a town in the game



Statecraft X™ level up

- Emanated from an earlier project
 - Game development and trial
 - Student centric
- Felt need for teacher PD
- This project: Aimed to enhance teachers' capacity to enact gbl in classroom
 - Specific challenges that teachers face in implementing gbl in classrooms
 - Trajectories and profiles of teachers' appropriation of gbl in classrooms

Research methodology

- Participants: 9 SS teachers – 5 sec schools
- Age : 25-30 yrs
- Pre-intervention workshop
 - Theory of the game
 - Played game
- Data: Interviews and class observations
 - Pre-intervention interviews
 - Post session interviews (sessions 2-6)
 - Audio recorded, interview session: 30-60 min
 - NVivo for coding and data management

Dialogic session in progress



Teachers' dilemmas

- Resistance to/discomfort with a new mode of teaching and learning
- Teachers' perception of system requirements and normative expectations
- Pressure to ensure that kids score high marks in standard tests
- Weak alignment between mandated and innovation-based forms of assessment

Resistance to/discomfort with a new mode of teaching and learning

- Teachers who do things differently from what students are accustomed to invite a reaction

But these other one third, they are more traditional in their learning. Like for example if I ... ask them to learn things on their own ... these are the students that will say 'I don't want to do this, why don't you just give me the answer?'

Resistance...

- Students are very concerned...results come before the game

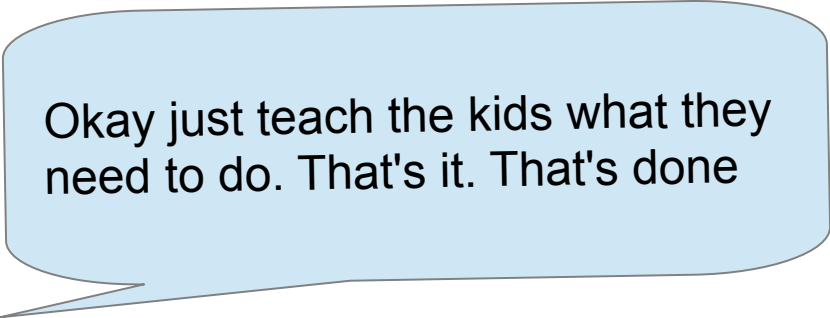
Statecraft does not 'teach' the principles of governance as in textbook

- 'skeptical kids' 'guinea pigs'

'we need to make it explicit to them' so 'they don't think they are being shortchanged'

Resistance...

- Teachers need to work hard to garner buy-in
- Resistance among teachers – peers



Okay just teach the kids what they need to do. That's it. That's done

- Brush it aside or blush in embarrassment?

Resistance...

- Change is unwelcome in systems that have attained a stable state of equilibrium
- Causes discomfort
- Threat to an established 'way of life'
- Teachers to forge ahead on strength of personal conviction

Teachers' perception of system requirements and normative expectations

- Little freedom to do anything except system's bidding

... sometimes stakeholders in school will have different ideas – they want to finish the objectives and syllabus,... have this pen and paper exercise... And to be honest um, some departments are actually very rigid about such stuff.

- Teachers' restricted agency and limited space for innovation

Is it quantifiable?

Teachers' perception...

- Agenda of formal education, strict modes of assessment, “answering questions according to topic”- No room for negotiation
- Is “good citizenship education” a key aim of SS curriculum, quantifiable?
- Tensions reflect a deep bias in favour of reductive, numerical ‘evidence’, exemplify the dilemmatic space that teachers inhabit

Pressure to ensure that students score high marks on standard tests

- Teachers were asked to reflect on their classroom teaching and preparedness of their students

Worried, because in the end of the day, I'm a teacher (and) I need to produce the results

- Pedagogical innovation introduce perturbation in habituated routines - non-trivial amount of time and practice are needed for new teaching routines

Weak alignment between mandated and innovation-based forms of assessment

- School assessment - Source based questions, structured essay questions – answering technique, Vs Statecraft – open ended essay
- Being 'objective' more prized than being relevant
- Extra work/time for teachers to 'drill' students
- 'Proven method' / 'safe option' of teach to test is put to test

Conclusion

- Teachers invariably inhabit dilemmatic space during curriculum innovation - non-standard modes of instruction
- Teachers needed to be convinced that “alternatives to present practice exist and are worth trying”
- Tensions between entrenched school practices and ideals of 21st century education
- PD should encourage teachers to reflect on their practices concretely

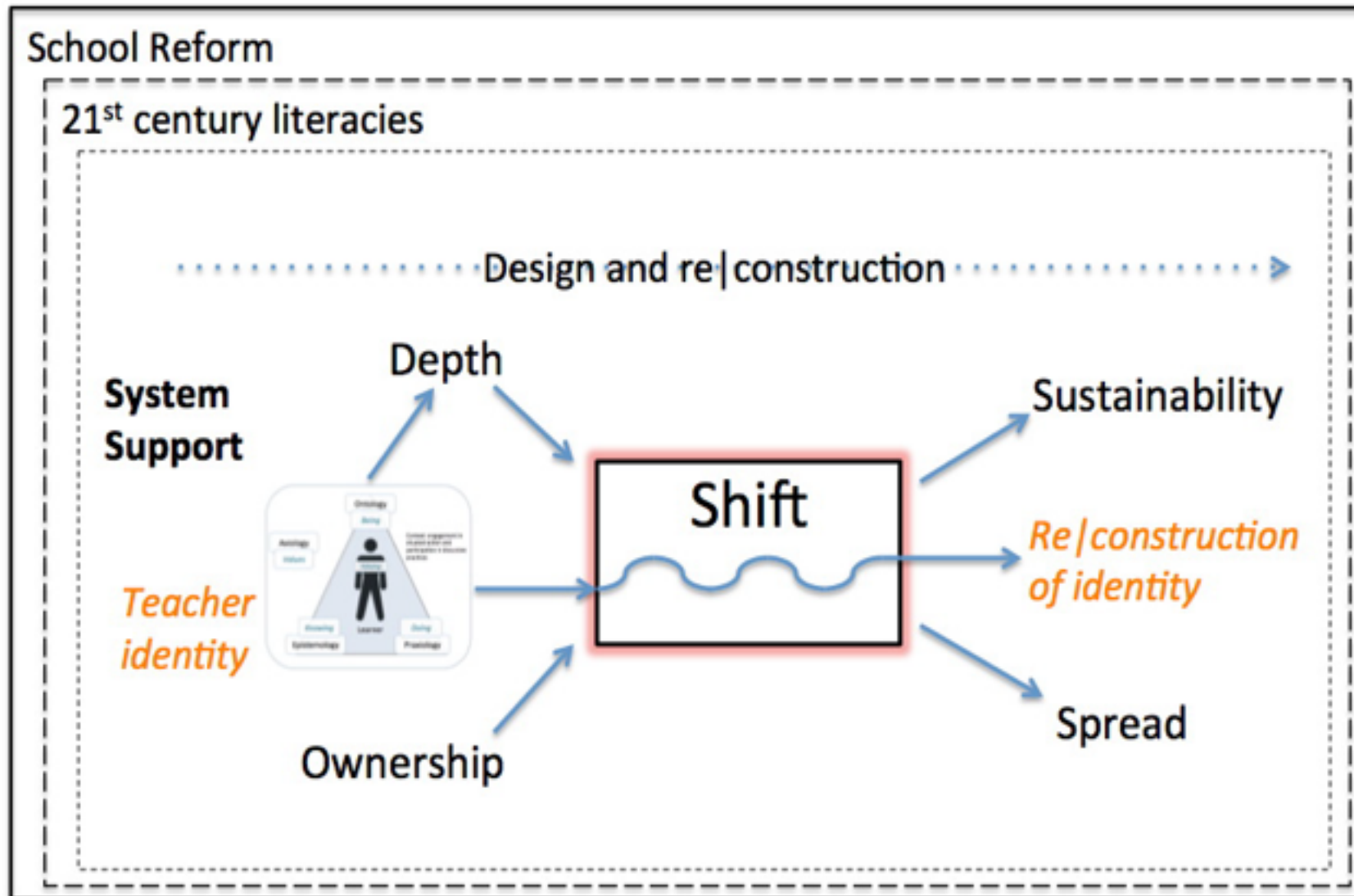
Implications for PD

- Teacher agency, reflexivity, reflection for re-conceptualizing PD
- Cultural shift in terms of: **values, process**
 - Humanistic view of teacher PD
 - Adhering to lesson plan to 'thinking on feet'
 - Teacher centric classrooms to student centric
 - Reduce pressure of accountability
 - Training and hands-on experience with technology
 - Supportive environment

Implications for PD – For Policy

- Help teachers develop literacy – to facilitate student learning
- In-service teacher PD- competencies valued in real world
- Sustainable professional growth - empowerment
- Greater time, space to teachers for innovation
- Continuous PD vs event based
- Taking calculated risk – changing curricula, modes of assessment

Appropriation model



References

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Thank You