In Search of Narrative Interactive Learning Environments

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The Promise

- of situating the learner in believable contexts

- of engagement with the content to be learned

- of the learner understanding themselves better

- …

Can't we just ignore narrative and get on with designing systems?

Narrative is associated with concerns about the practice and understanding of:

Empathy

Self-esteem

Emotions

Self identify

Motivation

Performance & a sense of the dramatic

Provisional Answer...

- Yes, excellent systems can be designed without explicit awareness of the issues mentioned and without any awareness of how issues relating to narrative are involved, but

- We might learn how to design more reliably (and better) by taking the whole person into account

Pick one, any one

So may the outward shows be least themselves:
The world is still deceived with ornament

Character
Plot
Pedagogy
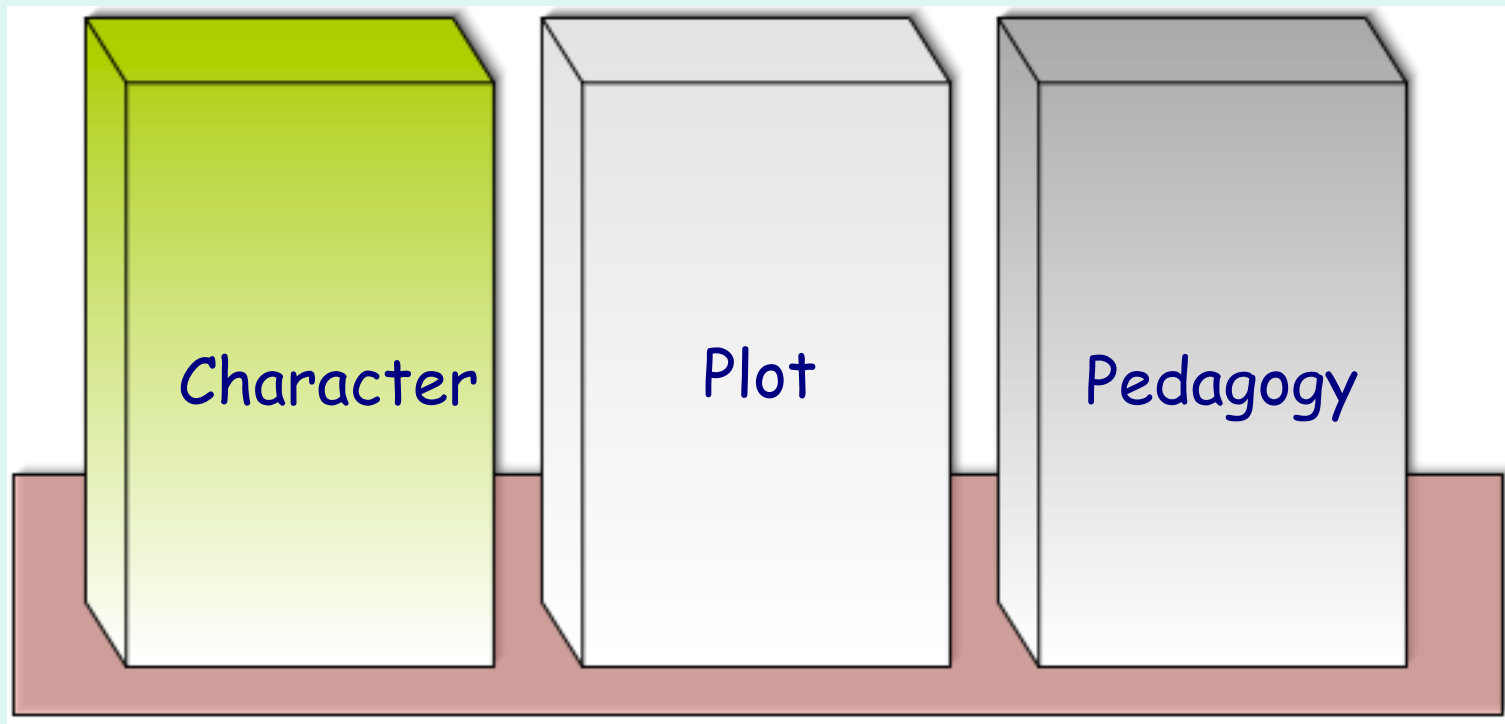
Facets of Learning

- **Preconditions for Learning**
- **Postconditions for Learning**
- **Learning Content**
- **Designing the Learning Environment**
- **Evaluating the Experience**

Preconditions for Learning

- Preparation can include cognitive, affective and conative factors, as well as situation and social ones.

- Setting up the back story

- Providing a context (social and physical)

- Using Ausubel's advance organisers?

Postconditions for Learning

- Reflecting-on-action
- Story making
- The use of post organisers!

Learning Content

- Embedding the content into a narrative mostly independent of the content
- Weaving the content and narrative together
- Managing the experience

Designing the Learning Environment

- Informant design (Scaife et al., 1997)
- Scenario-based design(Cooper&Brna,2000)
- Human centred design (Luckin et al., 2006)
→ Any design methods featuring narrative?
- Narrative centred informant design (Waraich, 2003)

Evaluating the Experience

- Many levels-cognitive, affective, conative, self-identity, personal relationships
- Methods very varied – not 'simply' looking for learning gains on standardised tests
→ Evaluation methods based on narrative?
- "Narrative inquiry" (Clandinin & Connelly, 2000)

Advances

Ghostwriter — Preparing the Learner to Write (Robertson, 2001)

- The experience seems to have been a success with children enjoying its use and teachers perceiving educational benefits such as improvement in self-esteem and classroom behaviour

The Right Context for the Right Learner?

"Gustaf, 30 years of age, was interested in motorcycles and had experienced corrosion problems when screws made from stainless steel were used in engine blocks made from aluminum. He told me about the world of making choppers, motorcycles stripped from most of the gear. His fascination for motorcycles and chemistry's capacity to explain material problems was the explanation for why he changed from being a student that hardly managed into a student making excellent results, progressing into becoming an engineer, studying material technology." (Bostrom, 2006)

Not so Easy to Realise?

NILEs have the capacity to ground scientific enquiry in real life situations; by doing this, they have the potential to motivate the learner to learn the underlying domain e.g. Quest Atlantis (Barab *et al*, 2006).

Quest Atlantis

Welcome

Mission

Questing

QA Worlds

How to Join

Load Software

QA Versions

Trading Cards

Questing

In Quest Atlantis the central activity is to go "QUESTING!" Members do this by travelling through virtual villages and worlds in which they locate and complete quests. These quests create opportunities for members to learn and grow in a variety of fun and exciting ways, at the same time providing useful information for the citizens of Atlantis. Below is a screenshot from the 3-D version of Quest Atlantis showing a scene from a village (which is contained inside the World) on the left and the homepage for the Quester on the right.

FearNot! — Improving Social Relationships

(Hall et al., 2006)
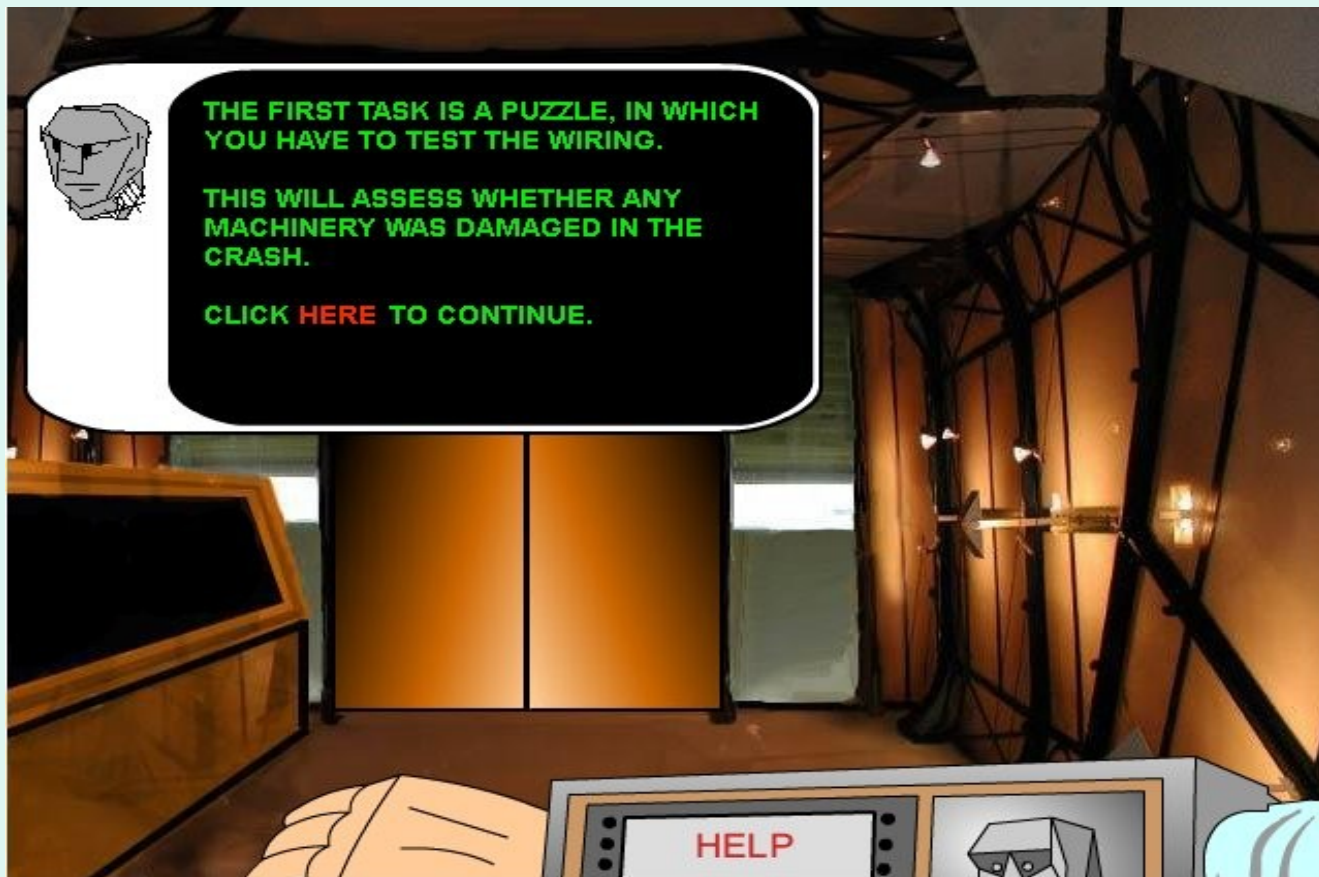
SAGA —Planning and Managing the Experience

(Machado, 2002)

Other Key Work on Managing the Experience

- MORE (Del Soldato, 1992)

- Facade (Mateas, 1999)

- Teatrix (Prada et al., 2000)

- Mimesis (Young & Reidl, 2003)

- IDTension (Szillas, 2004)

- TLTS (Johnson et al., 2005)

NCID —Bringing Narrative into the Design Process

Design Phase	Methods	Contributors	Outcomes/Techniques
(1) Define domain and problems & identify basic narrative elements	Interviews Analysis of existing materials & software Talk about nature of narrative	Lecturers Domain expert Students Designer Narrative facilitator	User requirements document Learning objectives/goals Preliminary documentation produced Group discussions with focus group of students from years 2 & 3
(2) Translation of specification & plot/character definition	Storyboarding & sketching, scenario creation	HCI expert Software designer Narrative facilitator Students	Storyboards; index card based narrative description; Paper based narrative scenarios; Student's stories/group work Story analysis
(3) Design Low-tech materials and test	Storyboarding Scenario creation Design through scenarios plot definition; character matrices	Lecturers Domain expert Software designer Students Narrative facilitator	Storyboards; index card based narrative description; Paper based narrative scenario (cut outs)
(4) Design and test high-tech materials	Prototype (high-tech) Multimedia Pre- and post-tests Cognitive analysis	Psychologist Software designer Students HCI analyst Narrative facilitator	Prototype system (BAT) functional; Pre- & post-tests Questionnaires Observation Interviews

Evaluating the Experience

- Focus Groups (Mallon & Webb, 2005)

- The vicarious, the visceral and the voyeuristic (Marsh, 2004)

- Retroactive protocol analysis (Kickmeyer & Marteas, 2005)

- Sensual evaluation (Laaksolahti, 2006)

Where's the Pedagogy?

- **Parallel to the work on the tension between interactivity and narrative is Reidl et al.'s (2005) work on trying to combine Narrative with ITSs**

- **Then there's Diekelmann's (2001) Narrative Pedagogy...**

Narrative Pedagogy

- emphases importance for learner of dealing with situations through interpretation

- downplays importance of being absolutely right or absolutely wrong, & of assessing learners through objective tests

Prospects for such a Pedagogy

- If NILEs can embody complex situations that encourage the learner to generate their own responses to the challenges found in a situation then we are part way to an approach that could support Narrative Pedagogy. What is evidently missing from most NILEs is the pooling of learner's interpretations and the opportunity for a learning community to work with these interpretations to form a new understanding.

The Next Ten Years: new kinds of bridge

- NILEs have mostly been used to set up the situations rather than provide bridges between what the learner knows and the intellectual and emotional challenges they are about to face. We would like to see more NILEs in the next ten years that prepare learners in this manner

Transforming experiences

- Future NILEs may provide stronger ways of organising the learner's experiences as part of reflection-on-action. SAGA provides for collaborative reflective experiences — we may hope for more such systems but perhaps with more extensive functionality for taking and transforming the stories of the learners

Improving Evaluation

The evaluation area is still somewhat problematic - the traditional experimental designs are difficult to apply as we take the perspective (story) of the learner more seriously.

This is an area where researchers need to develop robust methods of investigation related to methods such as narrative inquiry

New pedagogies?

- The notion of narrative pedagogy as developed within nursing education raises some profound challenges. It would be good to see some NILEs inspired by such approaches to learning (and teaching)

Pick one, any one

Place your bets on what to concentrate

Character | Plot | Pedagogy
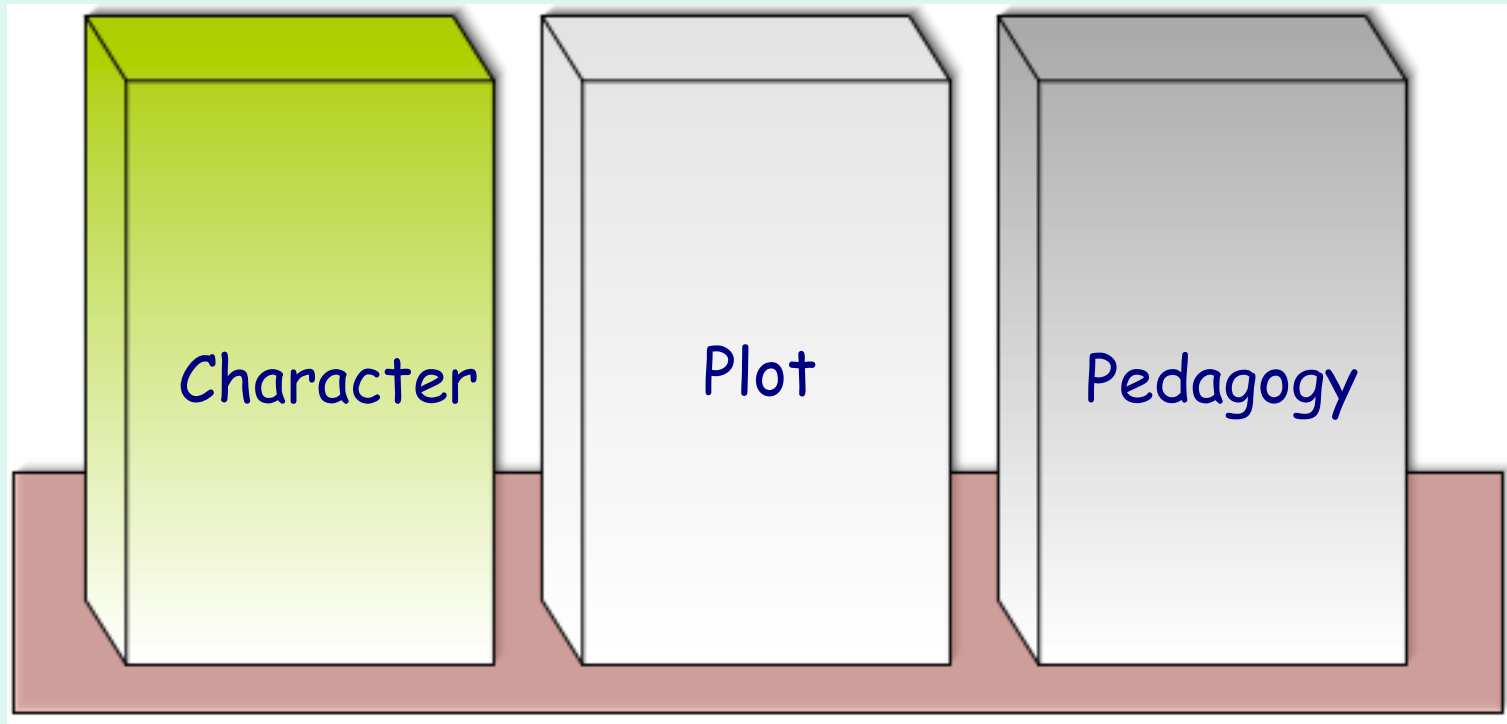
I choose the ground

- An empathic relationship with the learner is important (Brna *et al*, 2001)

- The notion of empathic design (Brna, 2006) - drawing the system designer into a two-way relationship with the learner.

- how to incorporate "the reciprocal roles of both designer and user in the overall interactive process" (Simms, 1998)

The Hope

- That future systems will be of use in sustaining the personal development of learners in terms of building and supporting quality relationships with, amongst others, parents, teachers and fellow learners. In using NILEs of the future, we might hope that these systems will also be used to help learners attain a wide range of competencies