The role of space in creative learning - understanding the learner experience

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CENTRE FOR EXCELLENCE IN TEACHING AND LEARNING THROUGH DESIGN

Introducing Hilary

- Researcher in technology enhanced learning
  - Mobile sensing, virtual and public online spaces, mixed media creation and presentation of activities
  - Beyond classroom experience
    - Media enhanced environments - Ambient Wood & Snark
    - Science data analysis simulation - Operation Montserat
    - Experiments in creating energy at science festival – Blogging wind energy generated to charge an iPod
- Background
  - Psychology & computer science (Dundee)
  - Human-computer interaction (Sussex)
  - Flight simulation, defence industry, education

Talk focus

Towards creative and effective measures via

- Context of research and contributing theories
- What factors can be investigated when considering learning spaces? Methods exploration through case study
- Results and thoughts
- Questions and discussion

It’s not all about me talking…

- What central ideas, theories, frameworks exist to contribute to our understanding of how (creative) learning happens?

Learning in (creative) HE environments

Environmental interaction and social processes

Social constructivism (Piaget, Bruner, Vygotsky)

Studio approach, Reflection (Schon)

Practitioner led learning

Learning through practice

Peer and collaborative learning

Experiential learning (Kolb)

Constructionist learning (Papert)

Conversational framework (Laurillard)

Model of expertise learning (Dreyfus)

Studio and reflective learning

- Widely used for creative practice
- Focus on process of learning within social group
  - Building repertoire of work with peer, tutor support
  - Exposure of experimentation, mistakes, learning, mood and affect, successes
  - Building multi-faceted communication skills
  - Training in critical review of others', then own, work
- Donald Schon's reflection-in-practice (1983)

  "alternative epistemology of practice 'in which the knowledge inherent in practice is understood as artful doing' "

Distilling Constructivism

Learning environment design principles (Jonassen, 1991)

- Create real-world environments that employ the context in which learning is relevant
- Focus on realistic approaches to solving real-world problems
- The instructor is a coach and analyzer of the strategies used to solve these problems
- Stress conceptual interrelatedness, providing multiple representations or perspectives on the content

Constructivism II

- Instructional goals and objectives should be negotiated and not imposed
- Evaluation should serve as a self-analysis tool
- Provide tools and environments that help learners interpret the multiple perspectives of the world
- Learning should be internally controlled and mediated by the learner.

Reference
http://www.ucs.mun.ca/~emurphy/stemnet/cle3.html

Learning spaces evaluations

- Temple (2008) on what's missing in LS in HE research
- Pearsehouse et al (2009) on evaluation practices for technology supported and physical spaces, FELS framework
- Add your paper in here (!)

Why?	What?	How?
Intentions	**Context**	**Procedures**
Purpose	Interactions	Timescale
Users	Design gestures	Longitudinal
Policymakers	Curriculum	Quick gain
Policy	Maths	Initiated
	ICT	Internal
	...	External
	Non-specific	Conducted
	Process	Internal
	Scripted	External
	Open	Feedback
	Practice	Summative
	Occupancy	Formative
	Interactions	Measurement Methods
	Academic Contract	Quantitative
	Effectiveness	Qualitative
	Participation	Research Methods
	Processes	Practitioner research
	Products	Academic research
	Physicality	Service level evaluation
	Users	Operation
	Culture	Technical
	Learning styles	Human
	Affective conditions	Top-down
	Effective conditions	Bottom-up
	Ecology	Tracking
	Designs	Use of space
	Taxonomic	Journey of learner
	Entrances	Tools
	Teaching spaces	Framework
	Learner Centres	Stages
	Use	Consultation
	Open	Pre-commission
	Closed	Post-commission
	Technology	Ongoing
	Mobile	Baseline
	Connected	Pre-commission
	Visual	Comparison
	Supportive	Reporting
	Specialist	
	Surfaces	
	Reconfigurable	
	Fixed	
	Learner Created	
	Infrastructural	

Table 1

A conceptual framework for the evaluation of learning spaces

Purpose & context of case study of HE students

Builds on

- Research technique & findings from analysis of tech-enhanced new learning spaces (Melhuish, 2010)
- Small pilot study: technology supported design learning environment (Smith, 2010)
  - Course's proximity to artistic inspiration of V&A museum galleries
  - Uses of multiple spaces for creative design




Museum learning centre pilot study





Evaluating Spaces for Learning

Your level: 1 2 3 4 **Date:** _____ 2010

The Learning Spaces project at the CETLD, University of Brighton is investigating the impact of space on people's learning to determine what aspects of space help and hinder learning. We are asking people to reflect on their learning experiences (informal and formal) today. This is an anonymous survey and answers will be reported without names being linked. Please answer the questions by thinking about your activities in all learning spaces used today (physical rooms, online places etc.)

1. What is your overall impression of the spaces used? Strongly disliked (1) (2) (3) (4) (5) Strongly liked
2. Please explain your reasons why: _____
3. Do any of the following match your perceived qualities of the spaces? Circle all that apply:

   Stimulating Hard Welcoming Calm Cold Interesting Ugly Colourful Bold Bland Elegant Light Comfortable Noisy
   Unpleasant Gloomy Friendly Empty Soft Pretty Interactive Challenging Confusing Professional other: _____

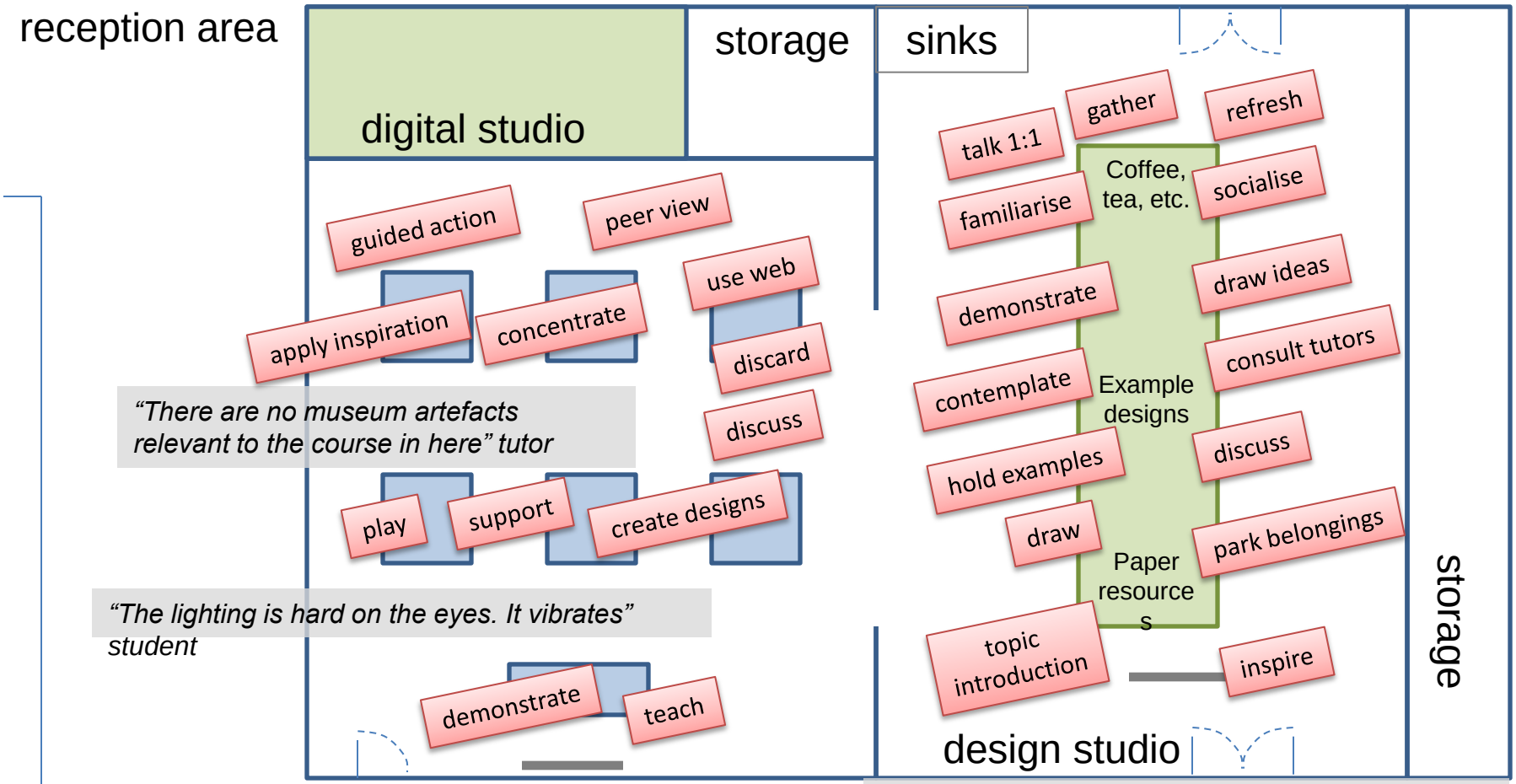
4. Describe what your learning activity was: _____
5. Today's *most* useful learning activity was: _____ in/on the _____
6. Today's *least* useful learning activity was: _____ in/on the _____
7. Which features of the space supported your activity? _____
8. Which features of the space hindered your activity? _____
9. What suggestions do you have for improving the space(s)? _____

   _____
10. Is there anything else you want to say about the spaces used? _____

    _____

Thank you for completing this survey. Some answers you have given may be especially interesting for our evaluation. If you are happy to be contacted for any clarification, please give your name and email address or telephone number: _____

Please return this sheet to Hilary Smith. Contact details for further information: h.c.smith@brighton.ac.uk



"There are no museum artefacts relevant to the course in here" tutor

"The lighting is hard on the eyes. It vibrates" student

"...liked how people were very free to go from room to room. This space seems very different when that middle door is open... seems a lot more inviting when there's a table you can sit down at and there's papers all over it" tutor

take notes

watch techniques

"...being able to access the gallery for inspiration" student

draw

seek inspiration

…to find

- Better understanding of how space impacts a variety of creative learning
- Students' preferences for their learning environments, their motivation
- Ways to capture and measure these aspects

Context of 3D design practice learning

- Research questions
  - How is workshop / studio space used by tutors and students?
  - What resources do students use?
    - What resources are generic versus customised / personalised?
    - Issues around access to and mobility of resources for continuity of learning, practice
  - What extra learning spaces and resources are available / used beyond the workshop / studio?

3D materials base course

- Higher education, level 1 students
- Course
  - 3D materials practice 2 week rotations
- Participants
  - group of 12 students, their technicians and tutors
- Space
  - creative studios / labs
- Activity
  - cross section of types of learning activities


POWER OFF
MUST
before
101


BLACKCURRANT

How these spaces were studied

Demonstration by tutors observation

Photos

Making session observing & questions

Critical review observing

Notes / drawings

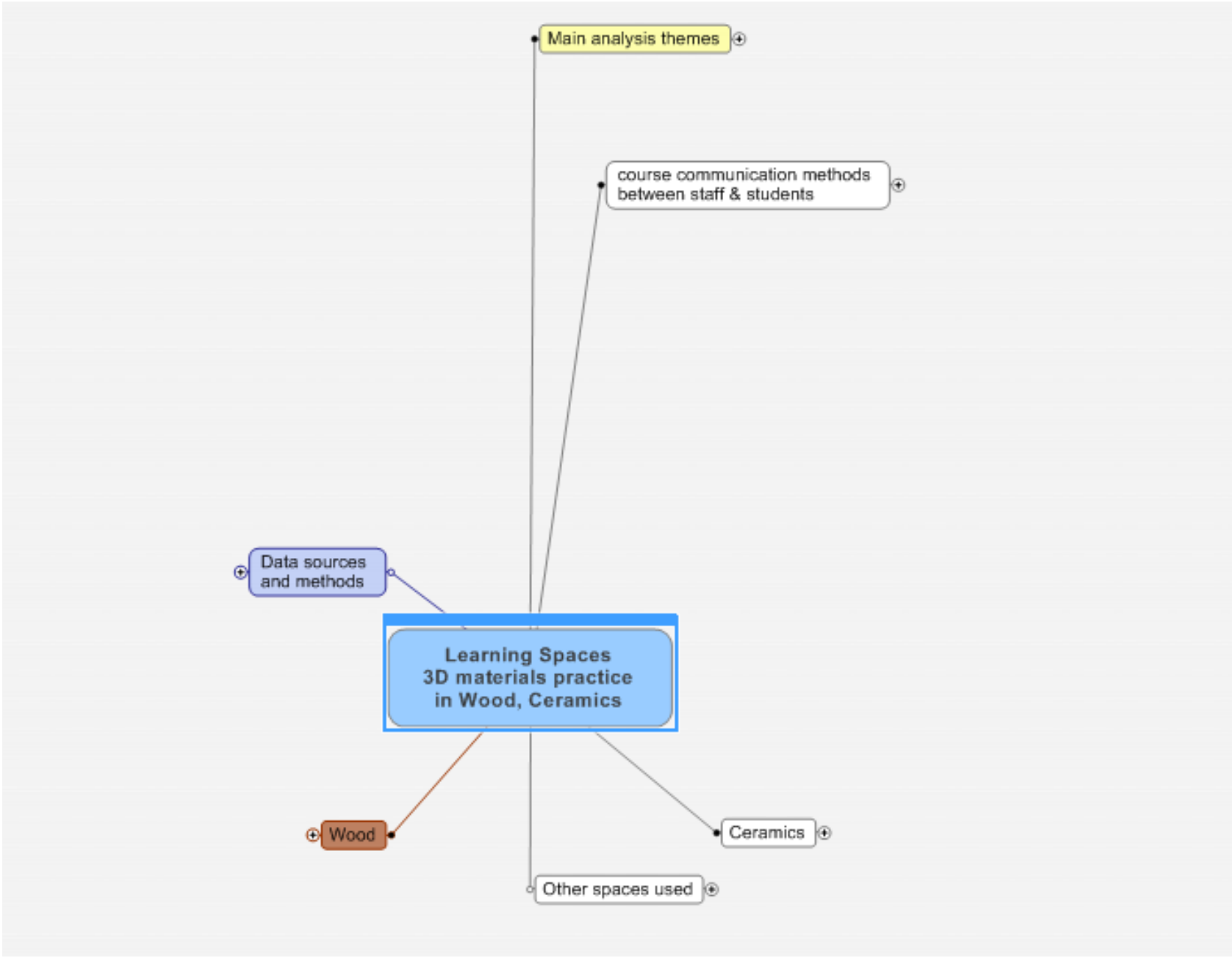
Student interviews

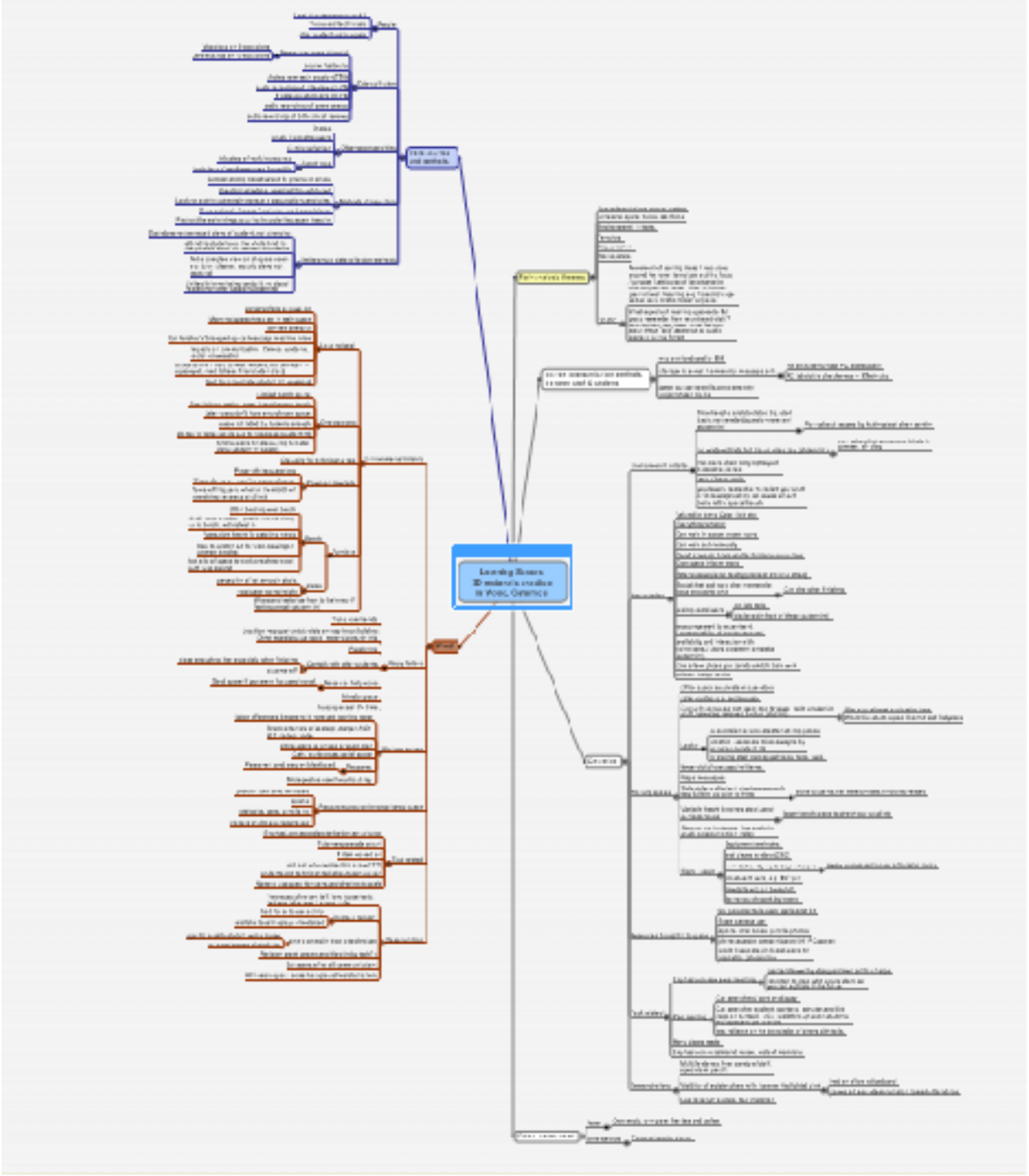
Questionnaire - anonymous

Technician and tutor discussions

Data analysis

- From transcribed interviews & questionnaire data, extract patterns of interaction, comments
- Any patterns in convergent and divergent views expressed?
- What contrasting views did Level 2 & 3 students reveal?
- How could the patterns of comments be categorised?


Main analysis themes
course communication methods between staff & students
Data sources and methods
Learning Spaces
3D materials practice
in Wood, Ceramics
Wood
Ceramics
Other spaces used



Findings

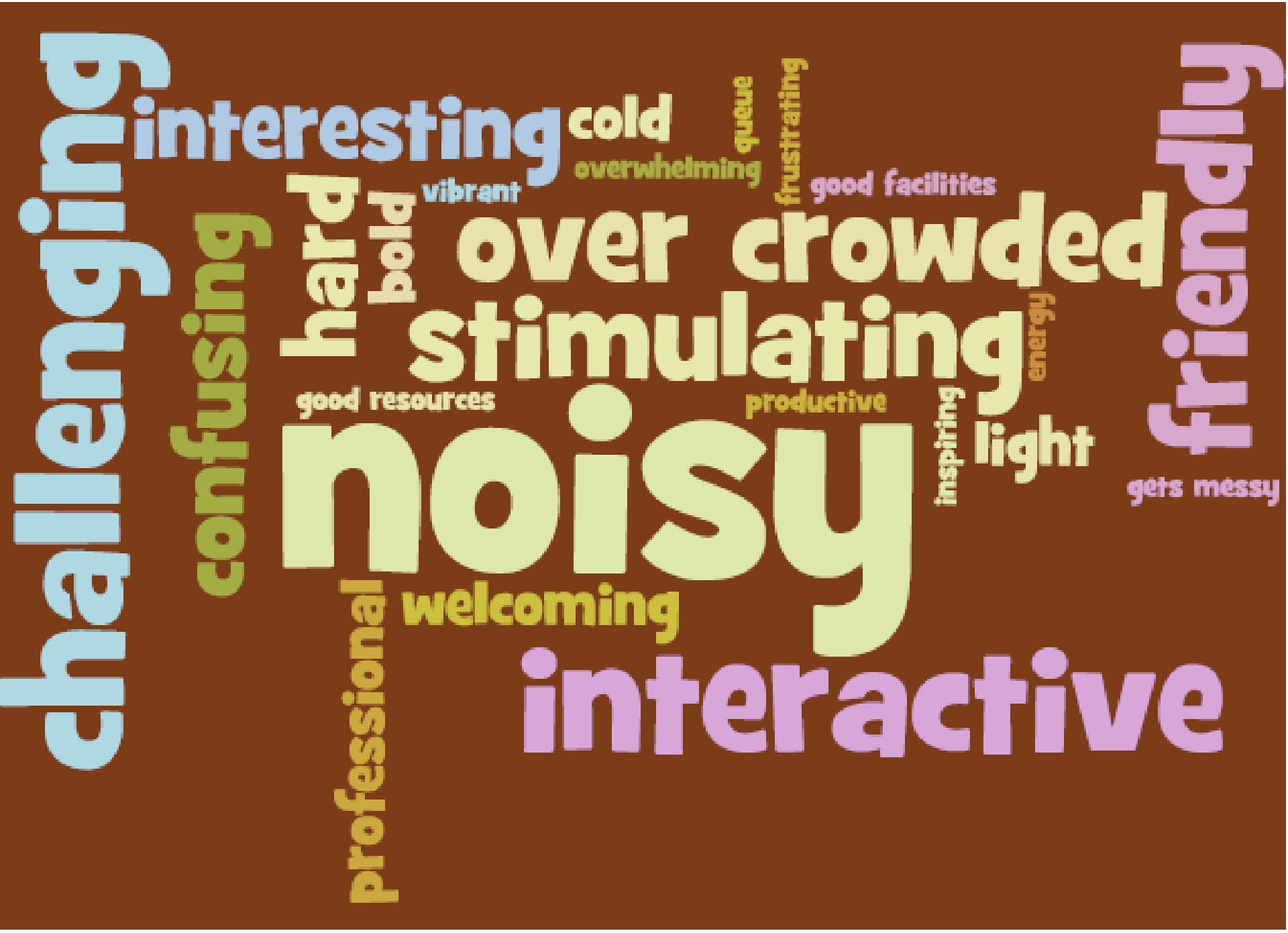
- Availability of cross section of tutor skills on-tap has an effect on perception of wide skill base from which students learn
  - “p-t tutor + business” model vs “full time” staff
  - Students’ rotations experiences shape strong preferences for spaces, tutors & materials choices by end of 1st year – choose specialisms
- Organisational structure can have big impacts
  - Power-on timetable, access to resources, tech availability
  - Autonomy / dependence to get work done
  - Background noise / funding to revise
- Hard to separate organisational decision impacts from space impact

Impact of wood context on work

- Hand tool emphasis with added necessity to use big machinery which can feel intimidating
- Close proximity, gesture, rigid timetable and sign language used to communicate in noisy environment
- Noise can help you focus too
- Proximity to services, regular visitors to space makes it friendly, unpredictable
- Reliance on knowledgeable peers as not even playing field & limited tutor time
- Large work pieces soon fill up space - cooperate

Impact of ceramics context on work

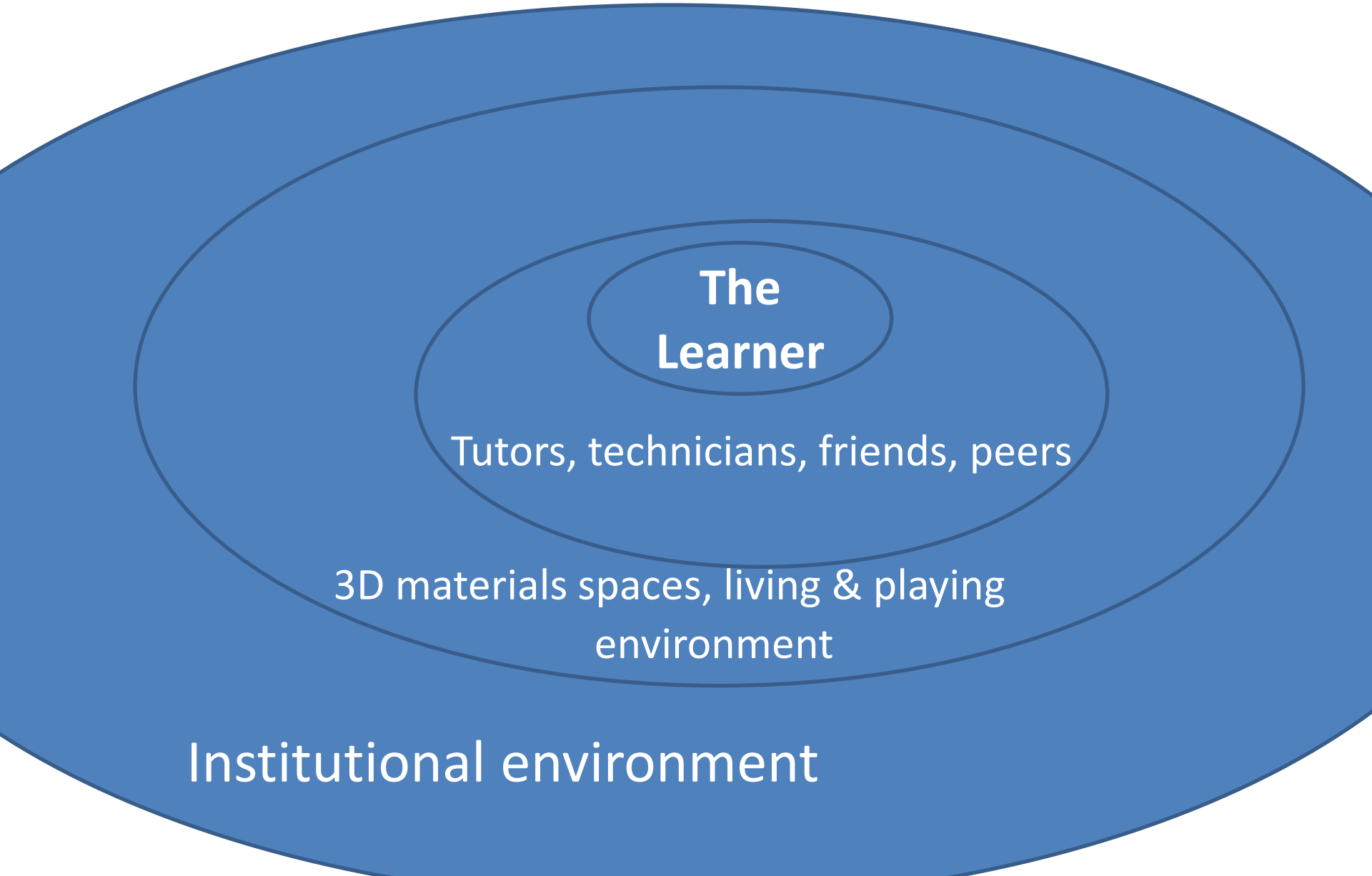
- Easier to move around spaces
- Autonomous & extended working is possible
- Possible to communicate socially in calm, quiet environment
- Senior students focus on limits of own table space, junior students crave own space
- Putting pieces to one side allows ongoing display of productivity and informal viewing
- More practicing part time tutors allows more scope for specialist knowledge within team – students value this
- Doors can swing back and break fragile pieces
- U shaped desk arrangement easier to interact with people from inside U, some furniture height options


challenging
interesting
cold
queue
frustrating
overwhelming
good facilities
friendly
vibrant
bold
hard
over crowded
confusing
stimulating
energy
good resources
productive
inspiring
noisy
light
gets messy
welcoming
professional
interactive


Stimulating
well equipped
open
colourful
promotes dialogue
busy
personal storage space
needs technique posters
interesting
spacious
welcoming
productive
clumpy chairs
comfortable
light
long opening hours
quiet
relaxing
friendly
professional
confusing
stimulating
sometimes overcrowded
peaceful
lack of tools
music
supportive staff
interactive
good location
small
fresh air
soft
calm
own bench
safe drying space
tables too low

Extended work spaces

- Course communication spaces
- Safe storage and lockers
- Extra personal (unsafe) studio space
- Cafe
- Home
- In theory – computer lab


The
Learner
Tutors, technicians, friends, peers
3D materials spaces, living & playing
environment
Institutional environment

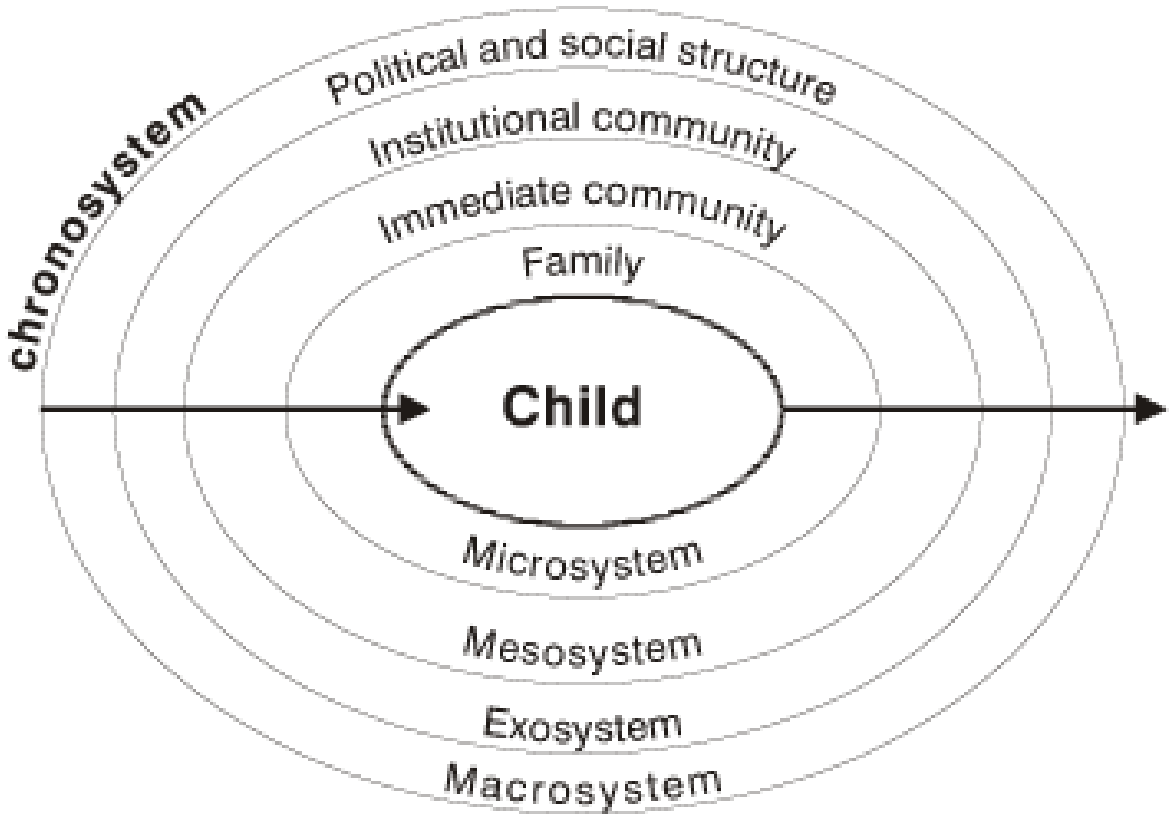


Figure 1 - Ecological theory of development[15]

Ref ***Ricardo Halpern, Amira C. M. Figueiras (2004) Environmental influences on child mental health***

Other takes on data

- Artefact tracking and mapping around the learning space
- What value do signs offer to space users? Spaces littered with signs - mini study on efficacy and utility

Discussion and questions..?

- What research methods yield useful data about the inter-relationship between learning and space?
- What creativity has been supported and how?
- Can space have greater impact on learning (and creativity)? How?
- Supplementary data?
- What difference could there be on short vs long term view of participants?

References

Douglas, D. and R. Gifford (2001). "Evaluation of the Physical classroom by students and professors: A lens model approach." Educational Research 43(3): 295-309

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