

# **The Adaptive Subject Pedagogy Model**

Empowering Student Teachers of Design & Technology Education to  
Create their own Pedagogy

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## **Abstract**

Technology Education subjects encompass a diverse range of concepts, ideas and subject content. In our experience, however, student teachers find it challenging to develop the types of evidence-informed pedagogies these necessitate. To be effective in the long term, teacher education must enable students to critically synthesise theory, practice and different forms of knowledge in ways that allow effective subject pedagogy to emerge. Yet this is ambitious. As teacher educators, it requires us to move beyond ideas of simply bridging the theory-practice gap, and away from pedagogical thinking which is led by overly instrumental approaches to lesson planning that can mitigate creativity and omit reasoning. It forces us to think through how we might help students to develop better pedagogical expertise in richer and more considered ways.

Here, we present a new andragogical model for teacher education, created as part of the Design & Technology Teacher Education programme at the University of Glasgow, Scotland. The Adaptive Subject Pedagogy Model, or ASPM, is developed from the work of Lee Shulman and draws upon theoretical and empirical understanding from content and pedagogical knowledge for teaching, reflective practice, learning progression and transformation. Rather than viewing pedagogy as generic, the ASPM purposefully promotes curriculum driven pedagogy and does not privilege published evidence over expertise. Specifically, the ASPM asks students to:

- Identify an area or topic for learning in the Technologies curriculum and the pupils who would be learning.
- Explicitly represent and explain the subject matter in that topic.
- Reflect upon their own experience of both teaching and learning the subject matter.
- Critically investigate the evidence-base.
- Synthesise the understanding gained from these elements to form a pedagogical approach for the topic which students could then draw upon when planning different lessons.

The model is being co-developed by staff and students using an iterative and participatory methodology. Empirical data is gathered at key points in the process using focus groups, student evaluations, and the written submissions of students form their use of the ASPM in their own learning. The data reported on here were analysed using thematic networks analysis (Attride-Stirling, 2001: <https://doi.org/10.1177/146879410100100307>).

Findings show that the ASPM has potential in helping students to organise and connect their thinking and, for some students, revealed a deeper level of pedagogical reasoning than was previously seen. For some students, the model enabled them to create pedagogical approaches that were both evidence-informed and unique to them. Overall, students found the model helpful, but intellectually challenging. They appreciated the research element, but some students found it to be more effective if they had the chance to reflect beforehand, and this led to the model being altered. By reflecting first, it meant that some of their personal theories could be challenged or more fully understood. The ASPM required a slower pace of learning to allow for deeper engagement by the students. Those who found it most helpful viewed it as something to inform lesson creation, whilst those who were more doubtful viewed it as something for planning lessons.

**Conference sub-theme:** Technology Teacher Training

**Keywords:** Initial Teacher Education, Technology Education, Pedagogical Expertise, Content Knowledge for Teaching, Subject Pedagogy.




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## Our Presentation

- The context for the study
- The adaptive subject pedagogy model (ASPM)
- Methods
- The findings from the study
- Reflections on our study

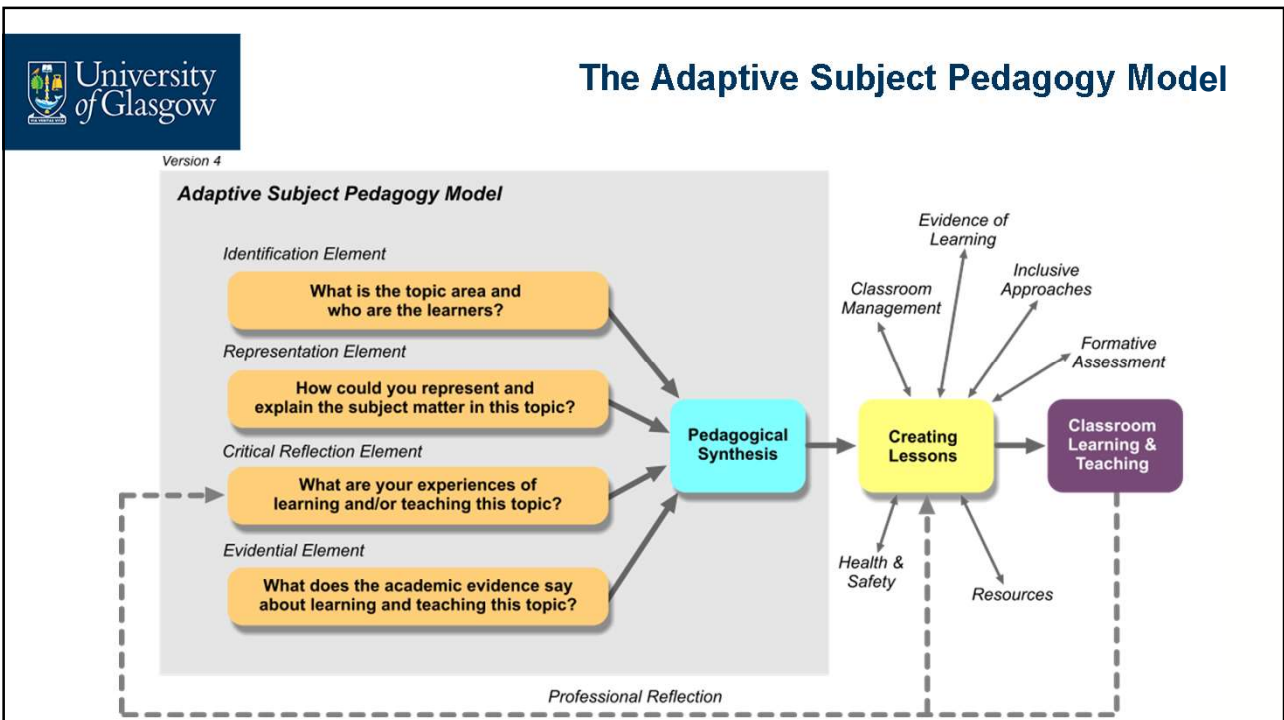
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## Study Context

- Bachelor of Technology Education (4-year undergraduate degree).
- 3 'strands': Teacher Education (TE), Core Technology, and School Experience.
- TE strand covers a wide range of generic areas and one component specific to technology education (Teacher Education Technology).
- Students struggle to inform their lesson development and teaching practice with appropriate theory/research.
- Development of scaffold for student thinking and reflection via the Adaptive Subject Pedagogy Model

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### Assignment Analysis (Student cohort in 2<sup>nd</sup> Year of Study)

- 7 end-of-course assignments (1000 words)
- Template analysis, adapted from King (<https://research.hud.ac.uk/research-subjects/human-health/template-analysis/>)
- Deductive coding to analyse use of evidence and integrative thinking

### Focus Groups (Student cohort in 3<sup>rd</sup> Year of Study)

- 2 groups (1 of 5 students, 1 of 4 students)
- Thematic Network Analysis (Attride-Stirling, 2001)
- Inductive

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### Interim Findings: Assignment Analysis (Cohort in Year 2, 2018-19)

- Analysed 7 assignments, there was evidence in two of the assignments of the ASPM making visible aspects of their thinking that would normally be implicit.
- Elements of basic synthesis of evidence to inform the creation of learning (only in those two)
- Overall, students struggled to represent the subject content, beyond a surface link to the curriculum topic (show vs tell).
- 5 assignments only showed limited engagement with research evidence with a sense of retrofitting this to existing ideas or omitting.
- Evidence often did not have informatory or explanatory power for pedagogy and where it did, many students missed this.
- Most students were able to reflect on their learning experiences of the topic at a descriptive level, but most did not then integrate that into what this would mean for how to teach the topic.
- Were using the ASPM to scaffold the assignment rather than think about the topic areas and associated pedagogies.

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## Findings from the Study

### Interim Findings: Focus groups (Cohort in Year 3, 2019)

- The students who were most enthusiastic about the ASPM understood that it was not designed for 'planning' a single lesson: 'it's our professional development'
- All students valued the research element - it encouraged them to search for and find published theory/research to inform their thinking
- It helped put the research into practice rather than just 'learning about it and forgetting it'; 'made you think of the subject as a whole'; 'exceptionally helpful'
- Students who used the ASPM during practicum found that teachers were skeptical of its value: these students wondered why ('in other areas, you wouldn't be doing your job if you didn't keep up to date with research')
- Student understandings of 'lesson planning' were deeply ingrained through practicum expectations (lesson plans, teaching files) – it was difficult for some students to take a broader, more holistic, more creative approach

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## Reflections

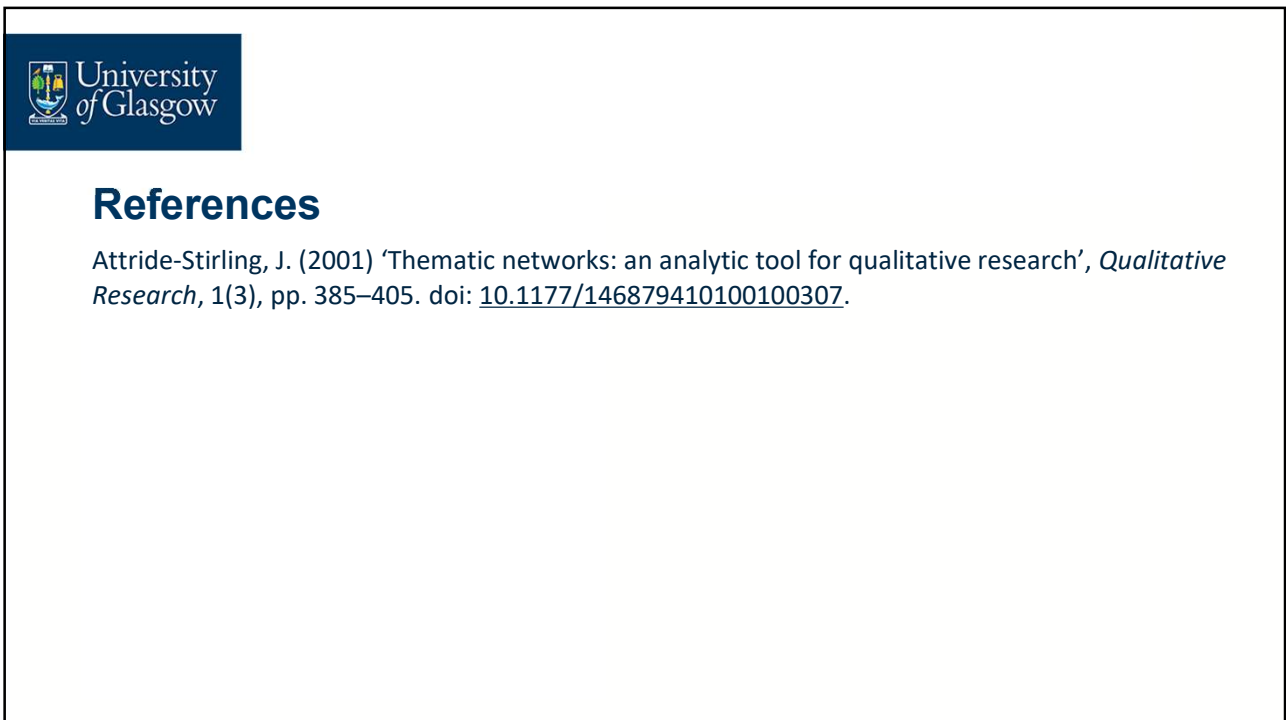
- Comparatively little time given to subject specific curriculum studies (100 hrs/1200 hrs).
- Too much covered too quickly – what happens if we slow student learning down and lead with curriculum and pedagogy?
- Seeing the issue as a 'theory-practice divide' is problematic: more practicum as the answer to the 'theory-practice' divide.
- Students thinking is driven by 'the lesson plan' and its orthodoxies (behaviourist ILOs and success criteria, lesson starters, plenaries, 'AfL strategies').
- Integrating practice with theory and evidence is very complex; complexity not realised as fully as we need it to be in our ITE.
- ASPM potential to foster a different type of expertise (requires rethinking our approach to teacher education holistically).

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