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# Becoming Analytical Champions: A Simple Hermeneutics-inspired Learning Analytics Model for Modules

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## Abstract

*The objective of this paper is to present a Learning Analytics (LA) tool designed for use within modules. The LA tool, from this point referred to as SHLAM<sup>2</sup> (Simple Hermeneutics-inspired Learning Analytics Model for Modules), enables learners to participate in a series of weekly learner self-reflections throughout the duration of a module. This paper reports on the preliminary use of SHLAM<sup>2</sup> as part of a 5-credit research methods module (for doctoral students). The 5-credit module was completed by three doctoral students over a 12-week period (from January to March 2023) in an Irish Higher Education Institution (HEI). The module leaders (co-authors of this paper) are also the co-designers of the SHLAM<sup>2</sup> LA tool. Therefore, the insights presented in this paper are based on the observations of the module leaders as opposed to the learners registered on the module. Our SHLAM<sup>2</sup> insights reveal that ‘Seeking Clarity’ (through reading and re-reading papers) is the strongest pattern of learning, while ‘Building Confidence’ (through evaluating an evolving design artefact) and ‘Finding Voice’ (through peer-led discussion and in-class presentations) are consistently lower throughout the delivery of the 12-week module.*

**Keywords:** Hermeneutics, Learning Analytics, Evidence-Based Nudges, Learning-by-Doing, Pedagogical Approach.

## 1.0 Introduction

The theory and practice of Learning Analytics (LA) is gaining popularity since the term was first mentioned in 2012 (Leitner et al., 2019). Notwithstanding the fact that LA is still “*in its infancy*” (Leitner et al., 2017, p.5), it is argued that irrespective of the chosen definition, LA should always “*provide actionable insights*” to be deemed a success (Leitner et al., 2019, p.2). Despite the growing attention on this interdisciplinary field, there are still significant challenges to implementing effective LA in HEIs (Leitner et al., 2019). For example, one such significant challenge is the integration of the theoretical understanding of learning with the practical development of the LA tools (Kaveri, et al., 2023). As a result, existing LA implementation efforts are sometimes criticised for not focusing on the process of learning and *micro* (learner-centric) patterns but instead targeting larger datasets to find *macro*

(institution-centric) patterns (c.f. Guzmán-Valenzuela et al., 2021; Leitner et al., 2017). In fact, this challenge highlights a notable misalignment between the capabilities of the LA tool and the actual needs of the learner (Kaveri, et al., 2023). Furthermore, the “*development and implementation of LA*” in Higher Education Institutions (HEIs) is “*often ad-hoc*” and lacks “*replication*” by others, given the “*lack of standardised design knowledge to guide LA development*” (Nguyen et al., 2021, pp.541-542).

In total, Leitner et al. (2019) identify six categories of challenges to the implementation of LA (see Table 1). These challenges span across the socio-technical components that define our appreciation of Information Systems, namely: *people, process, technology, and data*.

| Challenge                  | Key Requirement         | Summary   | Socio-Technical Component |
|----------------------------|-------------------------|---|---------------------------|
| 1: Ineffective Leadership  | Capability Building     | Leadership often lacks the capability to implement LA effectively across institutional environments.        | People & Technology       |
| 2: Disengaged Stakeholders | Shared Understanding    | Understanding of LA varies widely among stakeholders, limiting institutional acceptance.                    | People & Process          |
| 3: Technical Conversation  | Pedagogical Practice    | LA tool design often overlooks pedagogical approaches, focusing more on technical aspects.                  | Technology & Process      |
| 4: Insufficient Training   | Stakeholder Competence  | Insufficient training limits understanding of LA's benefits for all stakeholders.                           | Process & People          |
| 5: Limited ROI             | Proof of 'Value-in-Use' | Decisions on budget allocation for LA are challenged by difficulties in empirically evaluating its impacts. | Data & People             |
| 6: Inappropriate Policy    | Clear Guidance          | Institutions often lack specific policies and codes of practice for LA.                                     | Process & People          |

**Table 1. Challenge Categories of LA Implementation (adapted from Leitner et al., 2019).**

Ultimately these challenges can impact on academic staff buy-in: (i) to embrace the collection of learner-centric data and (ii) to use the data to drive change in their teaching practices. Therefore, the LA opportunity for HEIs lies in the fact that academic staff need to see the ‘value-in-use’ when they invest their time into an LA initiative. However, meaningful outputs may not be possible where a HEI adopts a technology-led, pedagogy-agnostic “one size fits all” approach to LA, failing to recognize the diversity of pedagogical approaches that define the learning and teaching space within each HEI (c.f. Kaveri, et al., 2023; Leitner et al., 2019). As a result, our approach responds to these LA implementation challenges by promoting a simple bottom-up approach, enabling academic staff to embed LA (our SHLAM<sup>2</sup>

tool) into their modules. Therefore, our approach is in direct contrast to most LA initiatives that adhere to a more top-down roll-out. However, these LA initiatives often fail to gain sufficient traction locally (amongst the academic staff), where data-driven changes in teaching practices become a reality.

Therefore, in this paper we are responding to “*calls to consider how LA should be applied to support learning and teaching activities in higher education*” (Nguyen et al., 2021, p.542). As a result, we leverage the outcome of our scholarly approach to learning and teaching (which started over 10 years ago) and was recently awarded the University College Cork (UCC) *President’s Award for Excellence in Teaching (2022)*. Leveraging our experience in educational co-creation and successfully building and implementing multiple pedagogical artefacts, we have designed SHLAM<sup>2</sup>, and believe it has the potential to transform the ‘*what*’, ‘*why*’ and ‘*how*’ of learning-based feedback, where the feedback provided is not reliant on the grading of learners’ submitted assessment(s), but more on the *interim struggles* of learners as they learn over a period of time (e.g. 12-week period of a 5-credit module).

The remainder of this paper is structured as follows. The background to the SHLAM<sup>2</sup> approach is first presented and this is then followed by a description of the SHLAM<sup>2</sup> approach in use. The insights from this instantiation of SHLAM<sup>2</sup> are then presented and patterns of interest discussed. Finally, the paper concludes with key learnings and implications for IS educators.

## **2.0 Background to the Story (*the retrospective*)**

To appreciate if the way we are teaching a 5-credit<sup>1</sup> research methods module (Action Design Research) is effective, we decided to analyse the learning experiences of recent graduates of the module. As a result, in June 2022, we conducted and analysed a conversational account workshop with four graduates (doctoral students) of the module. An in-depth insight into the conversational account is available in (Nagle et al., 2023). On completing the first-round analysis of this conversational account, we embarked on a second-round of analysis using the seven concepts underpinning Hermeneutics (c.f. Myers, 2004, 2009). See Figure 1 for a brief description of these seven concepts. This decision was inspired toward the end of the first-

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<sup>1</sup> 5-credit ECTS represents a notional student workload of 125 hours: [www.study.eu/article/what-is-the-ects-european-credit-transfer-and-accumulation-system](http://www.study.eu/article/what-is-the-ects-european-credit-transfer-and-accumulation-system)

round analysis, where the graduates' learning stories were most often focused on the time invested in engagement with literature (to make sense of the ADR methodology) and the challenge in effectively sharing their interpretations (captured in their respective design artefacts – *checklists to evaluate the execution of ADR in empirical studies*). Furthermore, an in-depth insight into the hermeneutics-inspired analysis is available in Sammon and Nagle (2023).

| <b>hermeneutic concept</b>  |  |
|---|--|
| <b>engagement</b><br>meaning emerges from the engagement of the reader and the text                                     | <b>hermeneutic circle</b><br>movement of understanding a text (from the whole to the part and back to the whole) |
| <b>appropriation</b><br>to understand the meaning of a text, we need to make it our own                                 |  |
| <b>autonomization</b><br>text has an autonomous, 'objective' existence independent of the author                        |  |
| <b>distanciation</b><br>a text takes on a life of its own, and text is the medium through which we understand ourselves |  |
| <b>prejudice</b><br>prior knowledge plays an important part in understanding a text                                     |  |
| <b>historicity</b><br>historically informed present informs our interpretation of a text                                |  |

**Figure 1. The Seven Hermeneutics Concepts (adapted from Sammon and Nagle, 2023)**

As part of our second-round analysis, (using the seven hermeneutic concepts of *historicity*, *the hermeneutic circle*, *prejudice*, *autonomization*, *distanciation*, *appropriation*, and *engagement*, on the confessional accounts of the four doctoral students), we also visualised our understanding of the *hermeneutics inspired learning-by-doing pedagogical approach* as a learning flow (see Figure 2). Specifically, we appreciate that four hermeneutics concepts (*engagement*, *appropriation*, *prejudice*, and *the hermeneutic circle*) are directly linked to the doctoral students' personal efforts at meaning making (their personal *inputs* to the learning-by-doing approach). Furthermore, the other three hermeneutics concepts (*historicity*, *distanciation*, and *autonomization*) are linked to the findings/results of the doctoral students' personal efforts (the *outputs* of the learning-by-doing approach and their willingness to share these outputs).

As presented in Sammon and Nagle (2023), the learning flow visual (see Figure 2) highlights that throughout the 8-sessions the doctoral student's *prejudice* shapes their interpretations less and less, whereas their ever-evolving *historicity* starts to have a bigger influence and part to play in their learning-by-doing. However, *appropriation*, *engagement* and *the hermeneutic circle* move somewhat in tandem over the 8-session period. In particular, the doctoral student's appreciation of the importance of movement between "texts" (e.g. the prescribed literature being reviewed, and the commentary of their peers during the "show & tell" sessions) increases, and their new and improved interpretations are perceived as being more accurate solutions to the problem (*how well documented is the execution of ADR in empirical studies?*). Finally, over time the *distanciation* between the doctoral student and their interpretations (influencing their design artefact) increases, and this affords the doctoral student (learner) the opportunity to critically evaluate their own interpretations as if they were the work of someone else. Furthermore, following the first "show & tell" session the sense of *autonomization* increases, and on submission of the final assignment, the level of *autonomization* between the doctoral student and their interpretations (design artefact) is at its greatest.

Finally, and most importantly, three patterns emerged from our hermeneutics-inspired analysis. These three patterns are: ***Seeking Clarity***, ***Finding Voice***, and ***Building Confidence*** (see Figure 3). Each of these patterns reflects the interrelationships between specific hermeneutic concepts, as follows:

- **Seeking Clarity:** (engagement, appropriation, the hermeneutic circle)
- **Finding Voice:** (prejudice, historicity)
- **Building Confidence:** (distanciation, autonomization)

Furthermore, Figure 3 highlights that reading, drawing, and talking play crucial roles in the learning process, as part of our 'learning-by-doing' pedagogical approach, contributing to different aspects of cognition (knowledge acquisition). This espouses a complementary learning approach through incorporating reading (research articles), drawing (the design artefact), and talking (in-class presentations about the design artefact) to encourage social learning and reinforce understanding. Therefore, incorporating such multiple modalities accommodates diverse learning styles, and combining these activities helps to create an engaging learning experience.

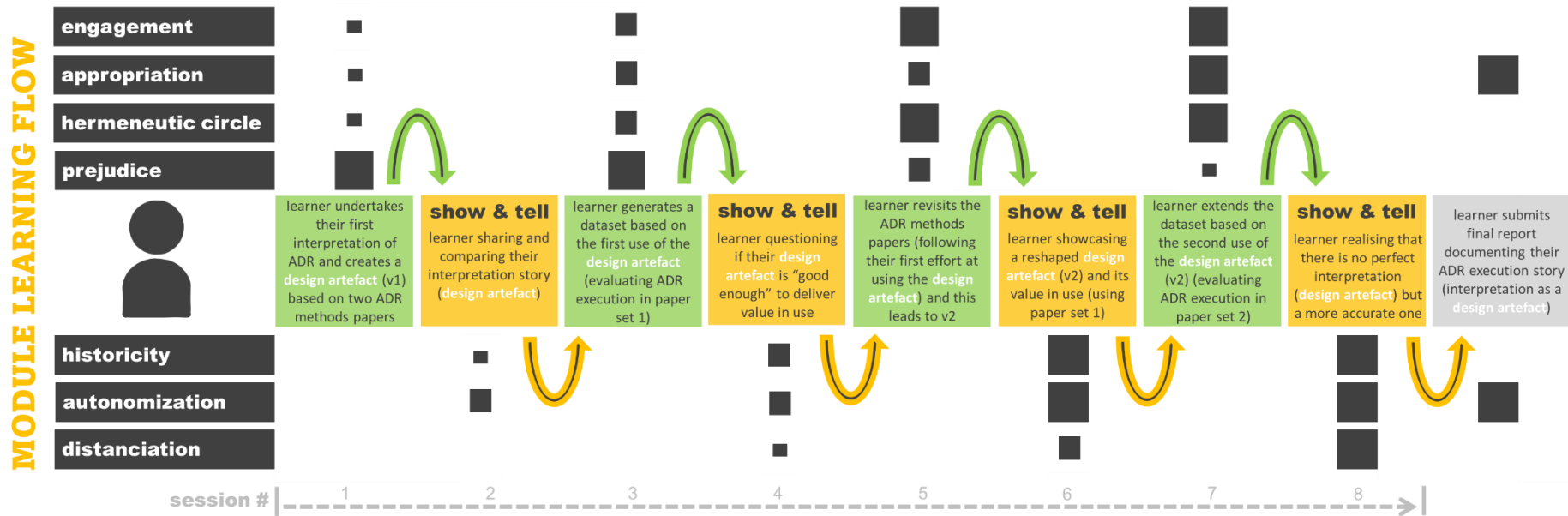
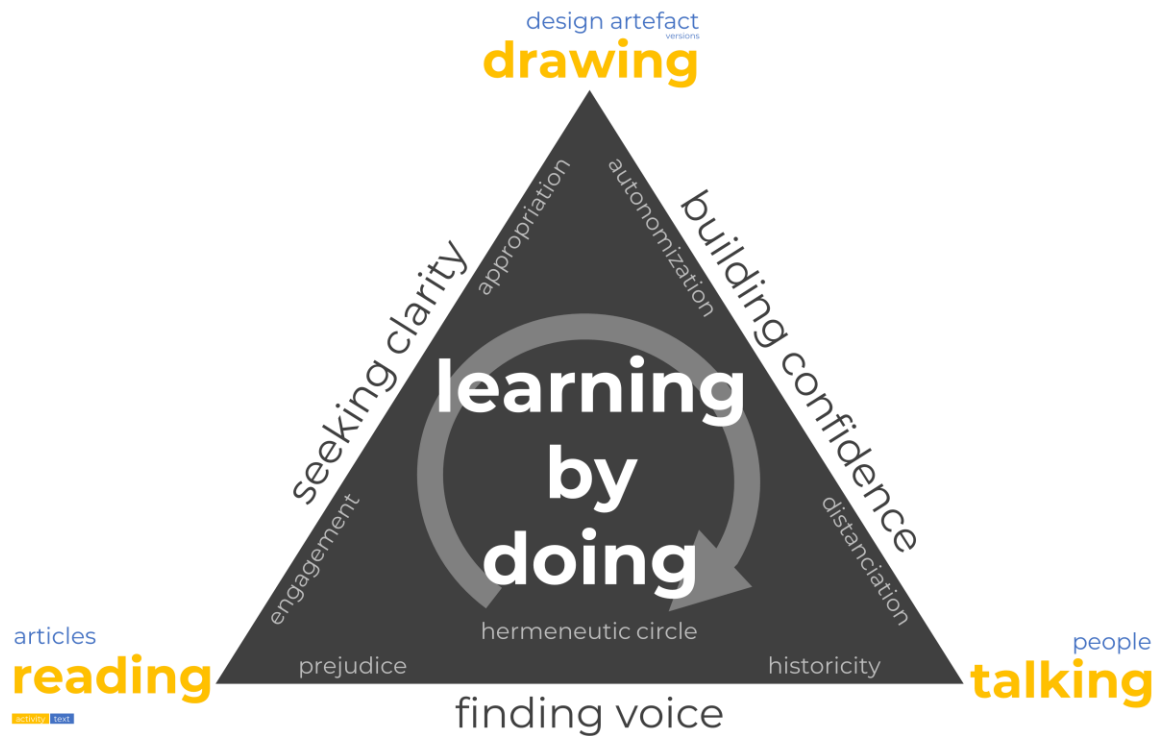


Figure 2. The ADR Module Learning Flow (a hermeneutics inspired learning-by-doing pedagogical approach) (source: Sammon and Nagle, 2023)



**Figure 3. A Pedagogical Approach Design Principle**

‘Seeking Clarity’ highlights the interplay between *engagement*, *appropriation*, and *the hermeneutic circle*. For example, for *the hermeneutic circle* to work, the learner needs to be actively reading, writing (reflecting on their reading), and interpreting (their writings and the original texts from where their written interpretations come). ‘Building Confidence’ highlights the impact of an environment that forces *distanciation* and *autonomization* between the learner and their design artefact (the shape of which reflects their “current” ADR understanding) over time. For example, in our module design, the four “show & tell” sessions ensure that the learner shares their interpretation, harvests peer feedback, and evaluates the shape of their design artefact continuously. Finally, these four “show & tell” sessions can also be somewhat disarming, as the learner must present their design artefact at each session. Therefore, this “show & tell” discourse is building the shared language of the module group and growing the confidence of each learner to share and challenge their respective perspectives (*historicity* and *prejudice*), thereby ‘Finding Voice’.

### **3.0 The Emergence of SHLAM<sup>2</sup> (the prospective)**

Having spent some time theorising around the four learners’ experiences (retrospectively) we turned our attention to exploring the possibility of having such learner-based insights



available to the lecturer (prospectively) during the delivery of the module. It was decided that one way of making this a reality (in a low fidelity way) was to ask questions of the learner (on a weekly basis) around the activities undertaken in that specific week in the name of ‘Seeking Clarity’, ‘Finding Voice’, and ‘Building Confidence’. A full list of the questions designed for this purpose (weekly self-reflection) is provided in Appendix A.

Therefore, the preliminary use of the LA tool (SHLAM<sup>2</sup> - Simple Hermeneutics-inspired Learning Analytics Model for Modules) was designed into the rhythm of the module delivery for the next run of the 5-credit research methods module (Action Design Research). This module run was completed by three doctoral students over a 12-week period (from January to March 2023). Despite this small number of learners, the module leaders were very conscious of the value in being able to track the learning activity patterns, associated with a ‘learning-by-doing’ pedagogical approach (see Figure 4), playing out over the duration of the module. Therefore, an MS Forms version of these questions was circulated to each learner through the Canvas VLE at a similar time each week (Wednesday afternoon) from week two to week eleven of the module. See Table 2 for the questions that map to the three patterns (highlighted in grey in Appendix A).

| Hermeneutic Concept   |                | Emergent Pattern    | Learning Activity | SHLAM <sup>2</sup> Learning Flow Question                                     |
|---|----------------|---------------------|-------------------|---|
| Hermeneutic Circle  | Engagement     | Seeking Clarity     | Reading & Drawing | Question 1, Question 7  |
|   | Appropriation  |                     |                   | Question 2, Question 4*, Question 8, Question 10*, Question 14*, Question 15* |
|   | Prejudice      | Finding Voice       | Reading & Talking | Question 14*, Question 15*  |
|   | Historicity    |                     |                   | Question 3, Question 9  |
|   | Autonomization | Building Confidence | Drawing & Talking | Question 13, Question 14*, Question 15*                                       |
|   | Distanciation  |                     |                   | Question 4*, Question 10*   |
| * Question provides an insight into more than one hermeneutic concept |                |                     |                   |   |

**Table 2. SHLAM<sup>2</sup> Learning Flow Questions.**

In essence, the SHLAM<sup>2</sup> approach delivers learner-generated, learning-specific, near real-time, module-based insights. These analytical insights are visualised week-by-week to ‘see’ and ‘celebrate’ the learner efforts (*interim struggles*), along the flow of learning. Therefore, by analysing the SHLAM<sup>2</sup> questions each week affords the lecturer with the opportunity to

appreciate how the learners (as a collective) are finding their way in learning about ADR (in this case). These analytical insights are easily accessible and provide near real-time learning patterns within a module. Hermeneutics, (the process of ‘meaning making’) underpins this SHLAM<sup>2</sup> approach and enables us to unpack the complexities of learning through the three fundamental learning patterns: (i) *seeking clarity on new concepts/content*, (ii) *finding voice through verbalising interpretations*, and (iii) *building confidence by translating interpretations into visual artefacts*.

## **4.0 The SHLAM<sup>2</sup> Insights**

In this section we present our insights through unpacking our observations around the learning patterns as part of the ‘learning-by-doing’ pedagogical approach. In fact, we view learning-by-doing as “*the process whereby people make sense of their experiences, especially those experiences in which they actively engage in making things and exploring the world*” (Bruce and Bloch, 2012, p.1821).

### **4.1 Unpacking the Learning Patterns**

The SHLAM<sup>2</sup> approach makes the lecturer aware of the *interim struggles* of learners as they learn and enables the lecturer to take action based on these insights. Specifically, the SHLAM<sup>2</sup> approach has two affordances for the module lecturer, as follows: (i) *evidence-based nudges*, and (ii) *week-on-week comparative analysis*. The *evidence-based nudges* create an opportunity for lecturers to prospectively provide weekly direction to the learners that positively impacts on the learner’s journey, based on the lecturer’s interpretation of the learner’s self-reflection of their learning activities. Furthermore, the *week-on-week comparative analysis* creates an opportunity for lecturers to see how the learning flow is materialising throughout the delivery of the module.

Using SHLAM<sup>2</sup> to capture learner-generated data around these three patterns affords both learners and lecturers the opportunity to see and appreciate: (i) a learner’s personal efforts at meaning making, and (ii) the outputs of a learners’ personal efforts, and (iii) their willingness to share these outputs. Therefore, through a series of *evidence-based nudges* and *week-on-week comparative analysis* we are elevating the position of feedback throughout the flow of learning, at the module level. As an example, Figure 5 presents a visual of the SHLAM<sup>2</sup> insights across the three patterns (showcasing the week-on-week comparative analysis) while

Table 3 presents an example of an evidence-based nudge, drafted by the lead author (during iteration 1).

| Pattern             | Observable Insight   | Evidence-Based Nudge   |
|---------------------|--|--|
| Seeking Clarity     | <b>STRONG</b><br>The percentage of learners reading a ‘new’ paper, as well as re-reading a previously read paper, finding something new, and making changes to their design artefact (capturing their interpretation). | celebrate those learners continuing to read ‘new’ papers and encourage more learners to re-read papers they have read previously, as they may produce new or improved interpretations.                       |
| Finding Voice       | <b>MODERATE</b><br>The percentage of learners discussing the paper(s) they read/re-read with a peer within and outside of the timetabled sessions.   | encourage all learners to discuss their interpretations with peers (outside of the “show & tell” sessions) as it will produce new or improved interpretations and avoid an overreliance on past experiences. |
| Building Confidence | <b>WEAK</b><br>The percentage of learners sharing their design artefact (capturing their interpretation), taking onboard a peer comment, but not making changes to their design artefact.                              | celebrate those learners taking the risk (at such an early stage) to share their design artefact (for feedback) and encourage more learners to also evaluate their interpretations in this way.              |

**Table 3. Evidence Based Nudges (generated from observations in session #2).**

For example, as we can see (Figure 5) for session two (“show & tell” #1), ‘Seeking Clarify’ is strong, ‘Finding Voice’ is moderate, and ‘Building Confidence’ is weak. Therefore, the *evidence-based nudges* (see Table 3) for ‘Seeking Clarify’ encourages learners to re-read more, for ‘Finding Voice’ encourages learners to discuss interpretations with peers outside in-class sessions, and for ‘Building Confidence’ encourages learners to gain more feedback through sharing their design artefacts (and their interpretations). It is worth noting that the visual presented in Figure 5 should be viewed more as portraying the ‘art of the possible’ from adopting such a simple LA tool within modules.

To provide an example of the operational value of the ‘*week-on-week comparative analysis*’ affordance of the SHLAM<sup>2</sup> approach, based on Figure 5, we can see that ‘Finding Voice’ and ‘Building Confidence’ are continuously moving between a rating of moderate and weak. Therefore, here is a sample narrative (drafted by the lead author) to evaluate the learning flow movement (for a *week-on-week comparative analysis* of week two and week three of the module).

- Overall, the learners have moved slightly this week, when compared to last week, based on the cumulative score of the three patterns (‘Seeking Clarity’, ‘Finding Voice’, ‘Building Confidence’).

Specifically, the move is accounted for in the lowered self-reflection around 'Building Confidence'. Therefore, it is very important to encourage learners to share their design artefact (outside of the "show & tell" sessions) as often as they can (so that it can be evaluated by others). It is important to remember that such evaluations are feedback opportunities on their interpretations of Action Design Research (ADR). These feedback opportunities will further enhance their learning experience and highlight what it means to 'be' an ADR researcher as opposed to simply 'do' ADR. Furthermore, 'Finding Voice' needs to be monitored as it remains weak over the past two weeks. Without 'Finding Voice' and 'Building Confidence' the learner will 'never' know if their interpretations of ADR make sense.

Outside of the learnings from the weekly use of the *evidence-based nudges* and the *week-on-week comparative analysis*, the somewhat more strategic value (to-date) from implementing the SHLAM<sup>2</sup> approach is best captured in a hermeneutics-inspired vignette, namely: *the engagement assumption*.

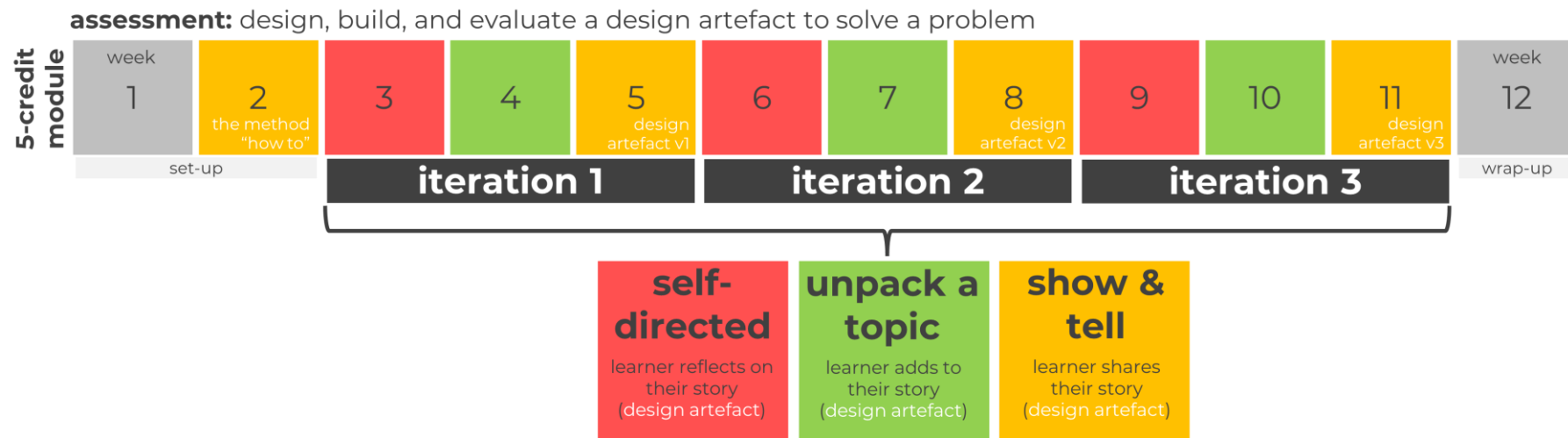
- **The Engagement Assumption:** In week 5 ("show & tell" #2) (see Figure 4) one learner presented their evaluation artefact to great applause. The independent evaluator (a seasoned ADR scholar) commented that the learner was displaying all the qualities of an ADR researcher (a sense of *being* and not just *doing*). However, one week prior to this "show & tell" session, the lead author (module lecturer) has a sense that this learner was not engaging with the module material (based on viewing their content engagement analytics on the VLE - Canvas). At that point in time, it crossed the mind of the module lecturer that the learner was disengaged from the module and the "learning-by-doing" pedagogical approach. Notwithstanding this assumption, it all made sense during the "show & tell" session (when the learner presented the evolution of their design artefact across two iterations). In iteration one, version 1 of the design artefact was designed using a small set of prescribed ADR methodology papers. Thereafter, in iteration two, version 2 of the design artefact emerged, where another set of prescribed ADR empirical papers was used to evaluate version 1, and the learnings from which led to the emergence of version 2 (of the design artefact). Therefore, the learner's story during the "show & tell" session presented the *'facts of the case'*, and what seemed like a lack of learner engagement was in fact a considered iterative approach to the design, build, and evaluation of the learner's emerging ADR design artefact.

Therefore, in this *engagement assumption* vignette the use of the SHLAM<sup>2</sup> approach highlights the value of "show & tell" sessions (as opportunities to 'see' and 'celebrate' the learner's progress and as challenges to module lecturer assumptions around learner engagement – originally formed by using content engagement analytics on Canvas). Furthermore, this hermeneutics-inspired vignette also highlights the uniqueness of learning styles and the link between the hermeneutic concepts of *engagement* and *appropriation*. Therefore, not everything we design into our curriculum (as module lecturers) is consumed according to our plan. However, ensuring that we can 'see' and 'celebrate' such learner engagement and appropriation patterns is the critical strategic value.

Overall, our observations suggest that learner confidence is growing over the duration of the module, specifically in the four "show & tell" sessions, and especially as the learners'

respective design artefacts evolve. This makes sense, given the fact that when the learner starts session one of the module, they are assumed to be a neophyte researcher (e.g. in Action Design Research). Furthermore, their design artefact does not yet exist. However, when the learner completes the module, they are assumed to be confident in their ability to execute a research study and their design artefact has matured (e.g. a checklist to evaluate how well the execution of ADR is documented in IS literature). As visualised in Figure 4, this evolution is made possible through the actual existence of a design artefact (tangible output) and evaluation of its efficacy in use, along with presentations of each learner's emerging story during the "show & tell" sessions. Therefore, the module leaders believe that the learner is not only learning about the topic but is also actively evaluating and reflecting on their understanding through the lens of their design artefact. As a result, the design artefact serves as a tangible representation of their evolving knowledge and provides a platform for self-reflection and improvement.

Throughout the 12-week module 'Seeking Clarity' is the strongest pattern. However, based on our observations, the time dedicated to reading and re-reading papers is always a challenge for the learners. Furthermore, 'Building Confidence' and 'Finding Voice' are the weakest patterns of learning, with the former being marginally stronger, given the existence and evolution of the design artefact throughout the iterations. Therefore, aligned with *evidence-based nudges*, the module leaders often encouraged the learners to keep progressing each week and to be more confident about the shape of their respective design artefacts. Interestingly, the module leaders could see this confidence during the "show & tell" sessions, where presenting during in-class sessions and overcoming the challenge of sharing their design artefact was contributing positively to the learning experience.



**Figure 4. The hermeneutics inspired ‘learning-by-doing’ pedagogical approach.**

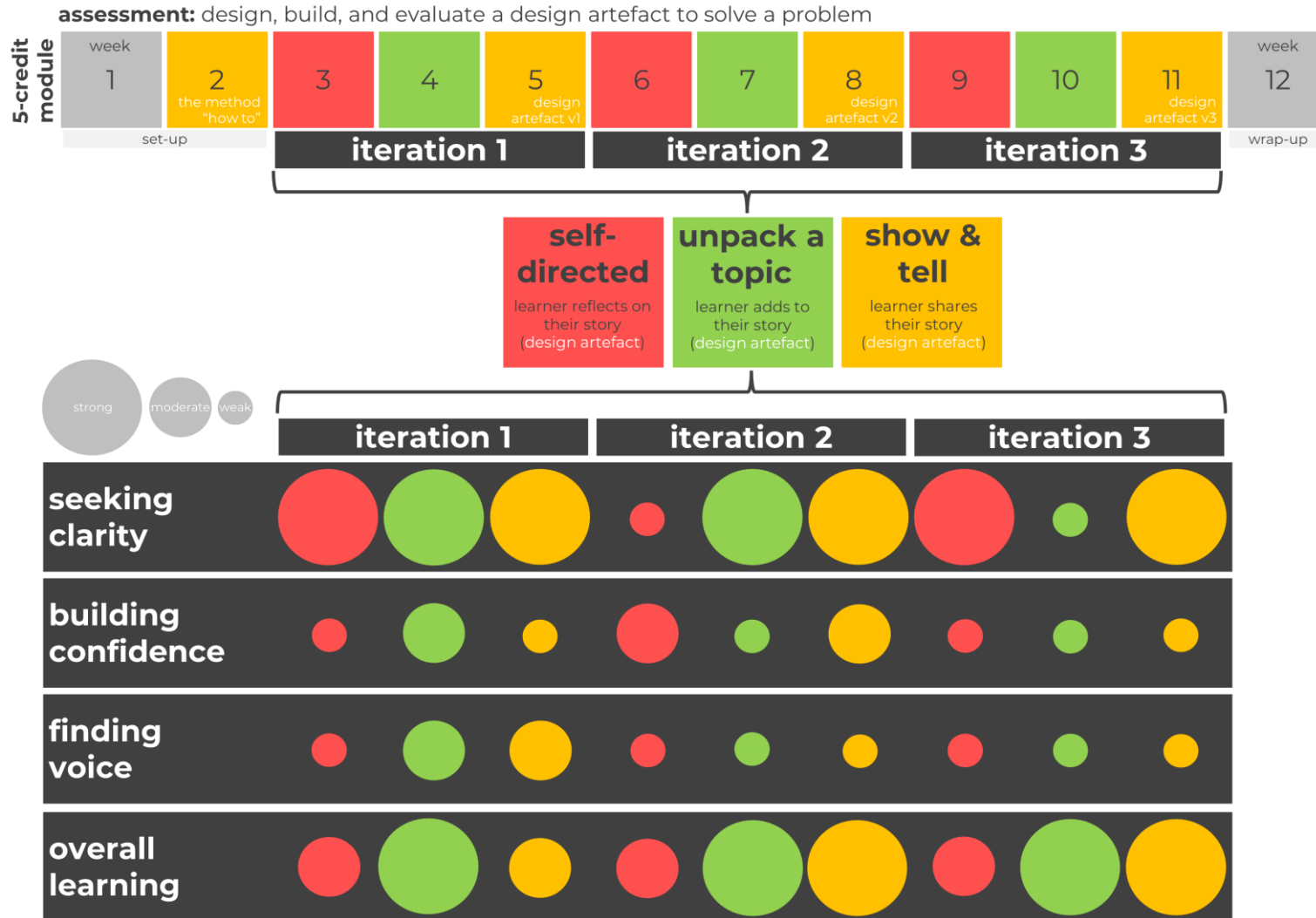


Figure 5. SHLAM<sup>2</sup> insights showcasing the week-on-week comparative analysis (across the three patterns) and overall learning.

## 5.0 Key Learnings & Reflections

As highlighted in Sammon and Nagle (2003) the *hermeneutics inspired learning-by-doing pedagogical approach* is an effective way to expose neophyte researchers to a new methodology (ADR in this case). Furthermore, hermeneutics is a very useful lens for analysing learning in the context of a research methodology (ADR in this case). Therefore, when we design our pedagogical approaches, we should do so in such a way that we are ensuring (as much as is possible) that our design (learning flow) will enable a learner “*to seek clarity, to find voice, to build confidence*” (see Figure 3). This ‘pedagogical approach design principle’ does in fact capture the essence of the theorising process that we observed from our use of the SHLAM<sup>2</sup> approach. Furthermore, following our theorising, as: (i) the designers of the ADR module, and (ii) the researchers of this topic, we conclude that this ‘pedagogical approach design principle’ also reflects the progress on the learner’s “*interim struggle*” toward “*the qualities of generality, accuracy, and simplicity*” in theoretical explanation (c.f. Weick, 1995, pp.389-390). In the context of this work, *simplicity* translates as ‘simple interpretations of the world’, *generality* translates as ‘the more that can be explained the better’, and *accuracy* translates as ‘closeness to a true or accepted value’. Therefore, some key learnings that have an impact on how we design our pedagogical approaches are as follows:

- There can be a ‘loss of learning momentum’ during self-directed weeks.
- There is a continuous struggle for learners in reading/re-reading papers (the time and effort). So less prescribed reading is more valuable.
- Learners can often fail to take every and any opportunity to evaluate their design artefact. Therefore, “show & tell” sessions are invaluable to promote the sharing of the design artefact (and interpretations) for feedback.
- The value of a ‘learning-by-doing’ approach and being feedback-centric on weekly efforts (accelerating weekly improvements) also carries a cost in the form of the lecturer effort involved in using the SHLAM<sup>2</sup> insights to shape the module sessions prospectively.

The SHLAM<sup>2</sup> approach to Learning Analytics (LA) provides a compelling response to several well-documented challenges in the implementation and adoption of LA in Higher Education Institutions (HEIs) (c.f. Leitner et al., 2019). For example, SHLAM<sup>2</sup> makes data collection and analysis directly relevant and beneficial to lecturers’ specific learning and teaching contexts (at the module level). By focusing on learner-generated data and allowing for pedagogical flexibility, SHLAM<sup>2</sup> not only encourages lecturer buy-in but also enhances the potential for LA to drive meaningful change in teaching practices (making the data not just informative but also



immediately useful). Therefore, our initial roll-out of SHLAM<sup>2</sup> suggests that it holds significant promise for HEIs (potentially increasing academic staff buy-in to use LA).

By enabling a bottom-up approach, SHLAM<sup>2</sup> empowers lecturers to take ownership of the LA process within their modules. This sense of ownership is critical for sustained engagement and effective integration of LA into everyday teaching practices. SHLAM<sup>2</sup> also focuses on learner-generated data, which inherently respects and responds to the individual differences among learners. This personalised approach can help lecturers see the relevance of the data, as it directly reflects their students' learning processes and not just abstract metrics. While the hermeneutic approach to meaning-making ensures that the data interpretation is nuanced and contextualised, which is often missing in technology-led LA solutions. Furthermore, by visualising week-by-week data, SHLAM<sup>2</sup> helps lecturers “see” and “celebrate” learner efforts, providing a clear narrative of how students are progressing. This can make the data more understandable and engaging, thus more likely to be used to inform teaching practices. Overall, SHLAM<sup>2</sup> can help foster a culture within HEIs where data-driven insights are valued and sought after. This cultural shift is essential for the long-term success of LA initiatives. In fact, the SHLAM<sup>2</sup> design also allows for adaptation to different pedagogical approaches and disciplines, avoiding the pitfalls of a “one size fits all” solution. Therefore, this flexibility is crucial for catering to the diverse educational landscapes within HEIs.

## **6.0 Conclusions**

Are we analytically impaired in our role as Higher Education Institution (HEI) educators? In many ways our pedagogical approaches can challenge our abilities to celebrate the efforts (*interim struggles*) of learners as they learn. Therefore, to be analytical champions, we need to improve our module level storytelling capabilities using Learning Analytics (LA) tools. To conclude, what are the implications of this work (the SHLAM<sup>2</sup> approach)? In essence, SHLAM<sup>2</sup> is an innovative hermeneutical data-driven approach to assessing learning that provides a unique dataset currently unavailable across many, if not all, HEIs. Furthermore, the insights generated will enhance:

- Student success by transforming the quality of student learning.
- Storytelling for accreditation purposes.

- Evidence-based decision-making through providing meaningful insights as feedback.

In fact, these SHLAM<sup>2</sup> insights (*evidence-based nudges* and *week-on-week comparative analysis*) can become the *de facto* standard for all module lecturers. Therefore, we believe we have the possibility to impact (positively and prospectively) on the *Assurance of Learning* and *Student Engagement* concepts within the HEI context. For example, for *Assurance of Learning*, SHLAM<sup>2</sup> provides greater granular data to enhance the AOL story and showcases learning prospectively at the module level. Furthermore, for *Student Engagement*, SHLAM<sup>2</sup> grows a community of action-oriented students (as enquirers) and lecturers as reflective practitioners. As we continue with this exploratory work, the following impacts are expected from the SHLAM<sup>2</sup> approach:

- The impacts on the learner are:
  - An appreciation of the importance of certain activities/behaviours during the flow of learning (based on receiving *evidence-based nudges*).
  - An ability to see their progress (e.g. week-on-week) over the duration of a module, independent of their performance in assessments only.
  - An awareness to perform a self-reflection on their performance and associate various activities/behaviours with that performance.
- The impacts on the lecturer are:
  - An ability to provide *evidence-based nudges* to learners in an effort to raise their awareness of the importance of certain activities/behaviours during their learning.
  - An opportunity to pick-up on near to real-time positives/negatives in the module feedback and alter their approach (where necessary) in order to prospectively enhance the student experience while learning.
  - An appreciation of the need to continue to develop as an educational professional (in the scholarship of teaching and learning) and design/deliver impactful content that engages learners.

It is reported that *importance* is the most critical dimension of relevance for IS practitioners, and similar to (Rosemann and Vessey, 2008 p.3) we view *importance* as research that “*meets the needs of practice by addressing a real-world problem in a timely manner [currently significant], and in such a way that it can act as the starting point for providing an eventual solution*”. Therefore, the work presented in this paper is an effort at addressing current shortfalls in the design of our pedagogical approaches. For example, can our research inform HEI policy around learner-based feedback throughout the delivery of a module? Is there a gap between the policy discourse and the actual support needed by lecturers to provide meaningful feedback, and learners to receive meaningful feedback on learning (using Learning Analytics (LA) on a weekly basis throughout the delivery of a module)?

The development and implementation of our SHLAM<sup>2</sup> (our LA tool) carries significant theoretical and practical implications for Information Systems (IS) education, particularly within the context of learner engagement and pedagogical adaptation. Ultimately, the use of SHLAM<sup>2</sup> enhances our understanding of learning processes. For example, by employing a hermeneutic lens, SHLAM<sup>2</sup> enables a deeper exploration into how learners interpret and make sense of the module content. This approach advances our understanding of the cognitive processes in learning, through emphasising the subjective experience of learners. Furthermore, the focus on real-time, module-based analytics provides an insight into dynamic learning patterns (over time) and this helps refine existing theoretical perspectives, particularly those concerning formative assessment and feedback loops (showing the importance and effectiveness of timely and relevant feedback in learning processes). This can lead to more adaptive learning environments where feedback is continuously integrated into the pedagogical approach. Finally, by visualising learner interactions and progress, SHLAM<sup>2</sup> aligns with constructivist theories where learning is seen as a process of active construction. Moreover, these collective insights about learner struggles and achievements foster a social learning environment where peers can learn from each other's experiences and insights.

From a practical perspective, lecturers can use SHLAM<sup>2</sup> insights (e.g. week-by-week data) to make immediate adjustments to teaching strategies, materials, and assessments. This adaptability can lead to more effective teaching practices that are responsive to student needs and learning patterns. Furthermore, by making learning patterns and progress visible, SHLAM<sup>2</sup> can motivate learners by celebrating their efforts and interim struggles. This visibility into learning can enhance learner engagement and provide a sense of accomplishment. Therefore, providing learners with insights into their own learning processes empowers them to take control of their learning, potentially leading to increased motivation and self-regulated learning. Overall, the integration of SHLAM<sup>2</sup> in educational settings does not only promise improvements in learning and teaching effectiveness but also provides a model that could influence wider educational practices and policies, particularly in how data-driven insights are used to enhance the learning experience.

It is hoped that the practicality of the work presented in this paper will help IS educators to design learning experiences (i) aligned with a *hermeneutics inspired learning-by-doing pedagogical approach*, and (ii) embracing the continuous use of the SHLAM<sup>2</sup> approach. Finally, we conclude our work by encouraging the use of the SHLAM<sup>2</sup> approach which is designed to encourage module lecturers to be reflective (prospectively) on how learning is unfolding from a learner's perspective. SHLAM<sup>2</sup> advocates for 'non-assessment based' feedback which is a departure from the norm and requires a mindset shift on both the side of the lecturer and the learner. The SHLAM<sup>2</sup> approach is built by academics for academics, to make learning visible through learner self-reflection feedback insights!

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## Appendix A

### SHLAM<sup>2</sup> Learner Self-Reflection Questions (version 1)

#### Reading Papers

1. Did you read a 'new' paper that you have not read previously?
2. Did you find something new in the paper?
3. Did you discuss the paper with a peer (outside of the timetabled sessions)?
4. Did you make any changes to your design artefact (because you read a 'new' paper)?
5. How much time are you investing in reading 'new' papers?
6. Rate your reading of papers at this stage.

#### Re-Reading Papers

7. Did you go back to re-read a paper that you have read previously?
8. Did you find something new in the paper?
9. Did you discuss the paper with a peer (outside of the timetabled sessions)?
10. Did you make any changes to your design artefact (because you re-read a paper)?
11. How much time are you investing in re-reading papers?
12. Rate your re-reading of papers at this stage.

#### Design Artefact Sharing

13. Did you share your design artefact with a peer (outside of the timetabled sessions)?
14. Did you take on board a comment made by a peer (specifically on your interpretation, captured in your design artefact)?
15. Did you make any changes to your design artefact (because you shared the artefact)?
16. How much time are you investing in sharing your artefact?
17. Rate your artefact sharing at this stage.

#### Overall Assessment of Learning

18. How important is your background (prior knowledge/experience) in shaping your design artefact at this stage?
19. How important is reading/re-reading papers in shaping your design artefact at this stage?
20. How important is sharing your design artefact (for feedback) in shaping your design artefact at this stage?
21. Please provide a short update on your learning at this stage in the module (a **positive** and a **negative** aspect).
22. Rate your learning **overall** on the module to date.