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Engagement by Design: The role of gamification, expectation management and feedback

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Introduction and summary

The concept of *engagement* has undergone major transformations over the years. The concept has attracted broad attention of many service sectors due to the idea of the 'Engagement Economy', a concept first put forward by game designer Jane McGonigal in 2008 (2008). The main point in this particular publication was the shift from the attention economy towards engagement. However, engagement is not easy to achieve and it is even more difficult to sustain. McGonigal suggests that the engagement economy involves emotions and feelings, which can be intrinsically rewarding. Games or game-like activities, in this scenario, were mentioned as a potential strategy to keep people motivated as games can provide reward mechanisms. In 2011, Deterding and colleagues (2011) then provided the concept of *gamification*: "the use of game design elements in non-game contexts" (p.9). Gamification has become a strategy to increase engagement and motivate people. But gamification is not a panacea for all issues around engagement. Ten years later there still a lot of people overpromising it, hoping that it would solve all types of engagement problems. This white paper aims at exploring this particular issue.

Key important findings:
- Expectation management and feedback are areas that need much greater focus
- A one-size-fits-all approach to expectation management is not effective enough
- The lack of engagement and motivation is itself symptomatic of an underlying cause, one of mismatched expectations.
- Traditional aspects of gamification are still important

Furthermore:
- The three key largest sectors with issues around engagement were healthcare, education and defence.
- 92% of healthcare providers have issues with patient engagement, followed by mismanaged expectations (82%) and lack of contact and direct communication (52%)
- 88% of education providers have issues with engagement and attitudes to working, followed by problems with online delivery (70%) and progress monitoring (61%)
- 50% of defence contractors reported having problems with talent retention and turnover. 48% reported having issues with conflicting goals and tensions between different departments (34%).
- The main challenge reported was how to keep people engaged in a long-term basis.

Over a period of four months, we interviewed **81 different individuals** and surveyed **302 further respondents**, all of whom could be described as having some duty of care for another person's wellbeing in some capacity; health, employee wellbeing, education, training, etc. Based on our findings, this white paper provides further recommendations for the service sector, cross-referencing the results

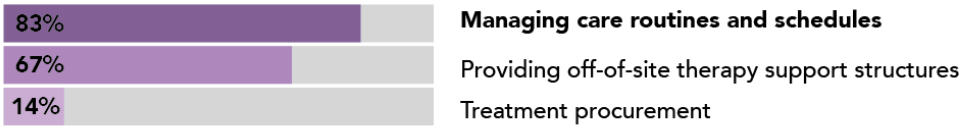from our survey with expert literature in the area.

Survey discussion

To begin we were principally interested in healthcare and in particular patient treatment adherence. Our initial hypothesis was that the widely stated poor treatment adherence (FDA identify less than half all treatment is taken correctly) across all healthcare could be explained by a lack of engagement and motivation in the patient. Therefore, if gamified activities have been shown to improve engagement and motivation, it follows that gamified solutions to healthcare treatment regimens could and should improve treatment adherence.

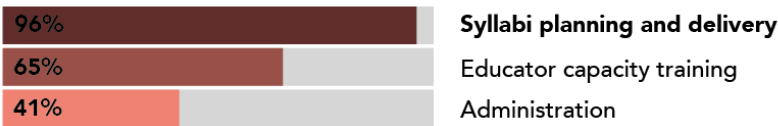Figure 1 provides our survey results on the top three activities each respondent is engaged with, and the top three pains they experience. According to our results, these top three activities and top three pains differ from one sector to the other. While looking at the top pains in particular, 92% of respondents from the healthcare sector said that patient engagement was still an issue. In the educational sector, this was not much different; 88% of professionals said that engagement and attitudes towards working were the main issues. For the defence sector, 50% mentioned that talent retention and turnover were the main issues. What is interesting in this exploratory data is that despite the different sectors, we have identified other issues such as conflicting goals (in the defence sector), mismanaged expectations (in the healthcare sector) and progress monitoring (in the educational sector), which are mostly related to managerial issues.
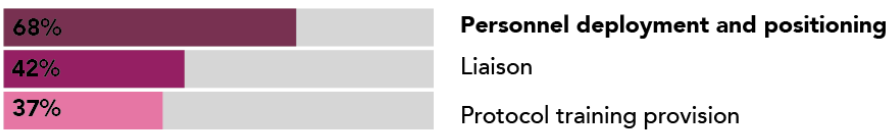
Top 3 activities

Healthcare

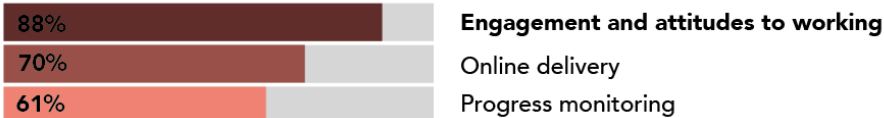|	
83%	**Managing care routines and schedules**
67%	Providing off-of-site therapy support structures
14%	Treatment procurement

Education

96%	**Syllabi planning and delivery**
65%	Educator capacity training
41%	Administration

Defence

68%	**Personnel deployment and positioning**
42%	Liaison
37%	Protocol training provision

Top 3 pains

Healthcare

92%	**Patient engagement**
82%	Mismanaged expectations
52%	Lack of contact and direct communication

Education

88%	**Engagement and attitudes to working**
70%	Online delivery
61%	Progress monitoring

Defence

50%	**Talent retention and turnover**
48%	Conflicting goals
34%	Tensions between different departments

Figure 1 Summary of results (% total number of respondents including this in their response)

1. What field are you in?
2. What is your role?
3. What are the top 3 activities in your role?
4. What are the top 3 concerns of your role?
5. What are the problems that prevent the people you help from succeeding?

Figure 2 Questions asked in our survey

Main findings

Our main finding is that *long-term engagement is still a key issue*. Our survey showed that 92% of healthcare professionals reported that patient engagement was a top issue, followed by 88% of educators reporting that engagement was again a top pain point and 50% of defence professionals mentioned that retention was a top problem. As mentioned before, we expected that gamification would be a way to improve treatment adherence or engagement in general. Our findings at the end of the study confirmed this in part; however, this does not tell us the complete story. The lack of engagement and motivation was itself symptomatic of a further underlying cause: *mismatched expectations*.

The working professionals who took part in the survey and interview processes explained that the reason patients, and more broadly individuals in non-healthcare fields, often lack motivation and engagement: mismatched expectations of what they might achieve versus what they actually achieve.

To use healthcare as an example, a patient might know that taking a treatment will be good for them. However, if that patient expects to see profound effects on their wellness within a shorter amount of time than the treatment can allow, for example improving back pain by walking, they become dissatisfied seeing a lack of progress and they then lose the motivation to continue their treatment either in part or completely.
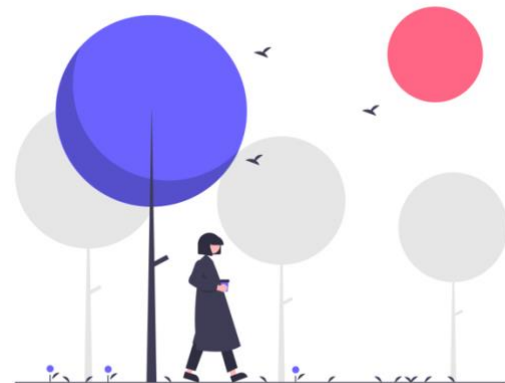
In the example of improving back pain by walking, this would be a case of the patient expecting significant improvement after one short walk once. Undoubtedly that short walk has indeed provided some benefit to the patient. The issue is that this benefit is small, unnoticeable, and cumulative to the effect that the patient does not notice the value of their treatment until a reasonable length of time doing the treatment has passed at which point the cumulative benefits do become apparent.

Towards a more customised and personalised expectation management and feedback

Though the contexts of "patients" and "treatments" were different in other sectors (defence management, education, corporate management wellbeing), this underlying principle was true for all of them in the experience of the professionals we interviewed and surveyed. In our findings we discovered as well that a one-size-fits-all approach to expectation management is not working and that the most beneficial approach is to make sure any feedback mechanism in a gamified activity for expectation management are customizable, responsive to the emotional and psychological needs of the individual, and personally aligned with that individual's reception of feedback and information.

Merging expectation management, feedback and gamification through Human-Centred Design (HCD)

Expectation management, feedback and gamification should work in conjunction with each other and should be part of the same design process. While looking at alternatives to increase gamification sustainability, AlMarshedi and colleagues (2015) created the Sustainable Gamification Impact (SGI) framework, included a Human-Centred approach to gamification, based on the individual's sense of purpose, relatedness and competence. One of the aspects mentioned was that in the health sector, *expectation matching* is needed, so there is a constant alignment between the patient's goals and the gamified application. The key aspect with regards to gamification is that motivational drivers do not exist in a vacuum. Cultural and social dimensions together with behaviour change strategies (e.g., tiny habits, nudge theory) can also considered to convey both intrinsic and extrinsic motivation (Almarshedi *et al.*, 2016). Thus, considering our findings, there is an indication that it is possible that gamified applications are only triggering extrinsic motivational aspects. One of the reasons for this to hold is the issue of mismatched expectations and lack of communications. People need to find a purpose for their action; that is, the activity they are performing needs to have a meaning for them. At the same this activity needs to provide consistent and coherent feedback.

There is a trend towards merging gamification under the umbrella of User Experience (UX) design as mentioned by gamification expert Andrzej Marczewski in his blog 10 years after Deterding et al.'s (2011) seminal paper. The reason for that is that people engage with systems "because

they want to". This is further supported by work of the Interaction Design Foundation. Thus, it might be the case that users might not even need gamification and a goal-oriented app is sufficient instead.

As mentioned here, one way to address mismatched expectations is by understanding users' motivations and changes, which can be emotional or rational. For instance, one might consider Hassenzahl's (2005) approach that products should contain both pragmatic and hedonic attributes that would trigger judgement, behaviour consequences and emotional consequences. And although engagement can be measured by clicks and interactions with the application, it is more difficult to get a glimpse about the emotional side of things through time.

Another aspect worth mentioning is that by embracing HCD, each 'user experience' would be different from one user to another. This suggests that 'personalisation' could be explored. Research shows that personalised gamified systems can be designed via the study of player typologies together with personality types and traits (which could then have particular emotional descriptors). The issue in this particular case is that there is very little autonomy for the user – and autonomy is crucial when developing applications that aim at long-term engagement.

The role of AI in expectation management and feedback

Artificial intelligence (AI) and machine learning (ML) holds particular interesting promises in the area of expectation management and feedback provision. In essence, many machine learning algorithms are regression machines, used for pattern matching, classification, and forecasting. As such, one could envision their use in users or patients according to their behaviour, match behavioural patterns, and forecast their future behaviour. This would allow for:

- Building a personalised system for patient and treatment support;
- The establishment of a feedback loop between the patient and the support system, in which the support system anticipates future behavioural changes and provides patients with feedback that improves their resilience against behaviours that would affect them negatively;
- Clinicians to provide personalised treatment plans for their patients, based on a sound analysis of their behaviour.

The heart of this personalized system is to provide automated feedback to the patient in a way that speaks to their "goal-oriented" behaviour. That is to say that as different people respond to different training stimuli in different ways, some preferring blunt and matter of fact feedback and some a gentler approach, and as those people require different levels of knowledge exchange as well, that a system that could adapt to those emotional feedback needs would be more effective in encouraging and supporting positive behaviour changes and continued engagement.

Thus, all people could be said to fall within two axes of extremes (direct – indirect) and (less – more information):
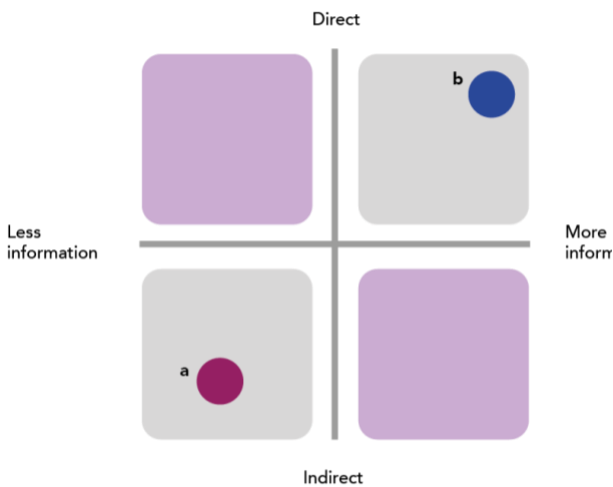
In this example person 'a' would be representative of someone who prefers gentler, less direct feedback with little information about their current performance being given to them. To illustrate such an example of this type of feedback might be as simple as "Well done. Keep it up!" when demonstrating good

behavioural changes. Person 'b', conversely, represents someone who would respond more to direct and fact-laden feedback. This might be something like "You have exceeded your previous positive performance record by XY units and should be expecting to see Z positive changes because of these actions".

To allow for this gradated feedback it is necessary first to use probabilistic classifier algorithms with broad training responses to hone and adapt the system to best respond to the individual person. This initial training can be enhanced with a weighted bias by using a short survey of feedback samples and asking the individual to grade their preference – though this does impact the user experience of the app itself and can, if not managed carefully, be detrimental to a person's performance. Over time these classifier algorithms are refined and improved based on user interactions with the app itself and making use of known behavioural interaction metrics to manage that refinement.

The challenge with this approach is that it is that it must respond accordingly to at least two people; the "patient" – primary user – and the "physician" – the consulting professional. In some instances of very young people or those who are dependent who are the primary user, the classifier algorithms must also factor in feedback to a third individual; the "parent" – a supervising caregiver. This third person must be as invested as the primary user and so feedback for them might, in some cases, also need to be provided as we have

identified the impact these third category individuals have on the success rate of primary users. Therefore, the ordinary refinements made to the weights of these classifiers made across individual, sample, and population must themselves be weighted for relative impact (∇C). This forms a curl with the data for the individual ($\vec{u}$):

$$\text{Relative impact} = \varpi \nabla C \times \vec{u}$$

This adds extra layers of complexity to the refinement process and means that it is necessary to pass and parse the propagation of the learning protocols for any extrema that lie outside of statistical expectations.

The obvious conclusion to this outcome is that as more classifier categories are added (the variable domain increases), the more tightly honed this parsing will need to be and the greater risk there will be that vital information might be overlooked or downplayed more than it ought to be. Therefore, the challenge is to manipulate the propagation processes in such a way so that the payoff between detail retention and efficacy is not too costly.

Final remarks

One of our main conclusions are that whilst traditional aspects of gamification design (engagement, motivation, knowledge transfer) remain important, expectation management and feedback is an area which needs much greater focus if those players are to remain engaged and motivated to continue to do what is best for them.

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Credits

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This white paper emerged from the work of Dr James Stallwood for the iCure Programme from SETSquared, a joint partnership between NUCLEOLUS and the University of Southampton

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